ICONES FILICUM SINICARUM

BY

HSEN SHU HU, D. S.

AND

REN CHANG CHING, B. S.

FASCICLE I

中國蕨類植物圖譜 第一卷

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中國蕨類植物圖譜

ICONES FILICUM SINICARUM

BY

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TO

DR. CARL CHRISTENSEN

CURATOR OF THE UNIVERSITETETS BOTANISKE MUSEUM

COPENHAGEN, DENMARK

THROUGH WHOSE PAINS-TAKING LABOUR AND EFFORT, IN HIS

MONUMENTAL WORK OF INDEX FILICUM

THE PTERIDOLOGICAL KNOWLEDGE OF THE WORLD

HAS BEEN GREATLY ADVANCED AND SYSTEMATIZED

THIS FIRST FASCICLE OF THE ICONES FILICUM SINICARUM

IS RESPECTFULLY DEDICATED.

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PLATE 1.

HELMINTHOSTACHYS ZEYLANICA Hooker et Bauer.

OPHIOGLOSSACEAE

HELMINTHOSTACHYS ZEYLANICA Hooker et Bauer in Gen. Fil. t. 47 (1840); HK. in Gard. Ferns t. 28; Bedd. in Ferns S. Ind. t. 69; HK. in 2nd. Cent. Ferns t. 44; Christ in Farnkaut. Erde 365; Diels in Nat. Pfl. Fam. 1. 4. 472; C. Chr. Ind. 344 (1906); v. A. R. in Malay. Ferns 777 (1908).

Osmunda zeylanica Linn. Sp. Pl. 2: 1063 (1753).
Botrychium zeylanicum Sw. in Schrad. Jour. 1800, 2:111 (1801).
Helminthostachys dulcis Klf. in Enum. 28, t. 1. fig. 1 (1822).
Botryopteris mexicana in Rel. Haenk. 1: 76, t. 12. fig. 1 (1825)
Helminthostachys mexicana Spring (1827).

Rhizome thick, fleshy, creeping, glabrous; *stipes* erect, 20-30 cm. long, greenish; *sterile segment* palmately pinnate, usually in 3 principal divisions, which are shortly petiolate, forked or pinnate; the ultimate segments lanceolate, 7-15 cm. long, 2-4 cm. broad, acuminate, the edge slightly toothed or entire, the base more or less cuneate; *veins* distinct, erect-patent, pinnate, usually forked; *texture* thin herbaceous; fertile spike solitary, arising from the base of *sterile segment*, 7-20 cm. long, 1 cm. broad, on a peduncle of about the same length.

Distribution: Australia, New Caledonia, India, Ceylon, Philipines, Queensland, Cochin-China, Formosa; China: Hainan.

A fairly common fern in Tropical Asia, inhabiting damp or swampy places; from China it was collected only in Hainan.

Plate 1. Fig. 1. Habit sketch (natural size). 2. A portion of spike (x 20). 2. The same with sporangia, showing the manner of dehiscence (x 52).

第 一 圖

錫蘭七指蕨（瓶爾小草科）

HELMINTHOSTACHYS ZEYLANICA Hooker et Bauer

地下莖粗壯，肥厚，匍匐；無鱗片；葉柄直立，長二十至三十粉，幾綠色；無子囊羣葉掌狀普通三裂，具短柄，再分叉或成二次羽狀；最後裂片披針形，長七至十五粉，寬二至四粉，漸尖頭，略成齒牙狀或幾全緣，基部約成楔形；葉脈顯明直立開張，羽狀，通常分叉；葉體薄草質；孢子囊穗單生，自無子囊羣葉片之基部生出，長七至十二粉，寬一粉，柄長略同。

分布： 澳洲，牛加里當尼亞，印度，錫蘭，菲律賓，臺灣；中國：海南。

本種爲亞洲之熱帶習見之蕨，多生於卑濕之地，在中國僅海南島有之。

圖註： 1. 植物全形（原大）. 2. 孢子囊群之一部（放大二十倍）. 3. 同前之具孢子囊者示其開裂之情形（放大五十二倍）。

Plate 1

第一圖

HELMINTHOSTACHYS ZEYLANICA (L.) Hooker

錫蘭七指蕨

PLATE 2.

ARCHANGIOPETRIS HENRYI Christ et Giesenhagen

MARATTIACEAE

ARCHANGIOPTERIS HENRYI Christ et Giesenhagen in Flora Regensb. 73 (1899); Christ in in Bull. Boiss. 7: (1899); Diels in Nat. Pfl. Fam. 1.4.439; C. Chr. Ind. 62 (1906); Matthew in Journ. Linn. Soc. 39:342 (1911).

Rhizome not seen; *stipe* about 50 cm. long, thick as swan's quill, terete, obscurely green, not articulate to the rhizome, and like rachis and the petioles obscurely hairy with lanceolate scales; *frond* about 50 cm. long, 25 cm. broad, ovate, pinnae remote, alternate, 3-5 on each side, similar to the terminal one, oblong-ovate, acute, 25 cm. long, 6 cm. broad, entire, slightly crenulate above the middle, acutely serrate towards the apex, petiole 1.5-2 cm. long, blackish, inflated, conspicuously pilose; *texture* thin chartaceous, light green, stipes and petioles rather succulent; *veins* dense, about 80 in each side, almost horizontally patent, almost extending to the margin; *sori* medial, with a broad free space about ½ cm. broad from the margin and the costa, linear, reddish-brown, about 80 on each side, to 2 cm. long, 1½ mm. broad, exinduciate.

Distribution: Yunnan.

This peculiar fern holds a systematic place between *Danaea* of America and *Angiopteris* of Tropical Asia, from the latter, it differs in elongate moniliform medial sori consisting of numerous sporangia, inflated petiole and simply pinnate frond. One of the most noteworthy discoveries made by A. Henry. A very rare plant, as not been known elsewhere in this country.

Plate 2. Fig. 1. Habit sketch, (natural size). 2. A portion of pinna, showing venation and a portion of sorus (x 16). 3. A cross section of sorus, showing attachment of sporangia and paraphyses (x 46). 4. Two sporangia, a. front view; b, lateral view (x 52).

第 二 圖

亨利馬蹄蕨（觀音座蓮科）

ARCHANGIOPTERIS HENRYI Christ et Giesenhagen.

地下莖未詳，葉柄長約五十粉，粗如鵝翎管，圓筒形，暗綠色，與地下莖不成關節，覆以披針形之鱗片及毛，葉軸及小葉柄亦如之；葉體長五十粉，寬二十五粉，卵圓形，小葉相距略遠，互生，每側有三五枚，與頂端小葉形態相同，長卵圓形，尖頭，長至二十五粉，寬六粉，全緣，自中部以上略成小圓齒狀，小葉柄長一五至二粉，幾黑色，中空，被有顯明之長毛；葉體薄紙質，淡綠色，葉柄及小葉柄頗肥厚多汁；葉脈密生，每側約八十條，幾平行開張，幾達葉緣；子囊群居中部，與中肋或葉緣間成半粉寬之空隙，紅褐色；每側有八十個，長達二粉，寬達一糎半，無子囊羣蓋。

分布：雲南。

本種特殊蕨在系統學之地位在美洲之 Danaea 及亞洲熱帶之觀音座蓮 (Angiopteris) 之間；與後者差別在長念珠狀生于中間之子囊群，由多數孢子囊集合而成，與其肥大之葉柄及一次羽狀之葉體；此種爲 A. Henry 氏最有價值之發見，在雲南省外尙未發見也。

圖註： 1. 植物全形（原大） 2. 小葉之一部示葉脈及子囊群之一部（放大十六倍） 3. 子囊群之橫斷面示孢子囊之附着及隔片（放大十六倍） 4. 兩孢子囊，a，前面，b，側面（放大五十二倍）。

Plate 2

第二圖

ARCHANGIOPTERIS HENRYI Christ

亨 利 馬 蹄 蕨

PLATE 3.

TRICHOMANES TERETICAULUM Ching.

HYMENOPHYLLACEAE

TRICHOMANES TERETICAULUM Ching* in Sinensia 1:2 (1929)

Rhizome naked or nearly so, very short, interwoven in dense wiry fibrous roots; *stipes* densely caespitose-fasciculate, wiry, rigid, terete, not winged or only narrowly winged towards apex, 4-6 cm. long or longer, naked; *fronds* glabrous, subdeltoid to linear; oblong, 4-6 cm. long, 2-2.5 cm. broad, 3-pinnatifid, rachis narrowly winged throughout; pinnae 3-5 on each side, remote, erect-patent, oblong-ovate, 1-2 cm. long, the upper ones gradually shortened; *texture* thin-herbaceous, translucent, dull green; *veins* distinct, 1 to each segment, spurious veinlets wanting; *sori* terminal on ultimate segments, mostly immersed, 2-3 to each pinna, inducium short funnel-shaped, slightly dilated, obscurely undulate at mouth not bifid, receptacle long-exerted, stout, dark brown.

Distribution: Kwangsi

Plate 3. Fig. 1. Habit sketch, (natural size). 2. A portion of pinna, showing venation and inducia (x 4).

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*For the species by Ching, readers are referred to Sinensia 1: p. 1—13 (1929), the Metropolitan Museum of Natural History, Academia Sinica.

第 三 圖

圓 柄 石 衣 蕨 (膜 蕨 科)

TRICHOMANES TERETICAULUM Ching

地下莖短，裸露或幾裸露，密織於鐵絲狀之纖維狀根中；葉柄簇生而密，鐵絲狀，硬直；圓形，無翼或僅頂部有狹翼，通常長四至六粉，或更長，無鱗片；葉體無毛，幾三角形至線長方形，長四至六粉，寬二至二·五粉，三次羽狀分裂，葉軸全體具狹翼，一次小葉每側三至五枚，其間相距頗遠，直而開張，長方卵圓形，長一至二粉，上部者則漸短；二次小葉二至四，全緣或二至三次羽狀分裂，而成線形全緣之小裂片，葉薄膜質，半透明，暗綠色；葉脈清晰，每小葉片僅一條，無假脈；孢子囊羣位於最後裂片之頂端通，常下陷，每一次小葉二至三枚，子囊羣蓋短，漏斗狀，微張開，其口部成不顯明波狀，不二裂，孢子囊羣之托長突出，甚粗大，暗棕色。

分布：廣西。

圖註 1. 植物體全形 (原大) 2. 一次小葉之一部，示葉脈與孢子囊蓋 (放大四倍)。

TRICHOMANES TERETICAULUM Ching
圓 柄 石 衣 蕨

PLATE 4.

WOODSIA CINNAMOMEA Christ

POLYPODIACEAE

WOODSIA CINNAMOMEA Christ in Bull. Geogr. Bot. Man. 122 (1906).

Rhizome thick, short, erect or oblique, clothed with pale-red lanceolate or linear-subulate entire membranaceous scales; *stipes* densely tufted (5-15 together), 2-5 cm. long or much longer in barren leaves, stramineous, densely clothed near the base with scales similar to those on rhizome, ferruginously pilose in other parts, particularly the under surface; *frond* usually oblong-lanceolate, 6-12 cm. long, 1.8-2.5 cm. broad, simply and usually evenly pinnate, slightly reduced towards the base; pinnae sessile or subsessile, horizontally patent, 8-14 on each side, opposite or subopposite, sometimes alternate, 6-8 mm. apart, ovate-oblong, base equal, rounded or somewhat dilated, subtruncate or subcordate-truncate, crenate-serrate or deeply pinnatifid in barren leaves, 8-12 mm. long, 3-5 mm. broad at the base, the barren ones much broader with shortly cuneate base and pinnatifid over half way down into 3-4 rounded, subentire or slightly crenulate obes on each side; *sori* completely hidden in thick tomentum, inducium globose at first, ruptured at last into long-ciliate lacinae; sporangia 4-6 to each sorus, dark brown, very shortly stipitate.

Distributions: Szechuan.

This distinct fern belonging to § *Physematium* is allied to Woodsia rosthorniana Diels, but differs in small more numerous pubescent longer pinnae, and stiff rachis; with a habit intermediate between W. polystichoides Eaton and W. rosthorniana Diels.

Plate 4. Fig. 1. Habit sketch (natural size). 2. A pinna with tomentum removed, showing venation and sori (x 5). 3. A portion of pinna, showing disposition of sori and inducia (x 15). 4. Two induciate hairs (x 108). 5. Hairs from the rachis (x 108). 6. Scales from the base of stipe (x35).

第 四 圖

赤色巖蕨（水龍骨科）

WOODSIA CINNAMOMEA Christ

地下莖肥厚而短，直立或斜臥，上覆鱗片，鱗片膜質，色淡紅，披針形或線針形；葉柄五至十五，簇生，長一至五粉，其不生孢子囊群者尤長，稻桿色，近基部處密覆同樣之鱗片，他部則被鏽色之薄毛；葉身通常橢圓披針形，長六至十二粉，寬一·八至二·五粉；通常偶數羽狀，鮮奇數羽狀，向基部則略退化；小葉平展，無或幾無葉柄，每側八至十四枚，對生或幾對生，鮮互生，其間相距六至八糎，卵長方形，基部對稱，圓形或略擴大，幾截形或幾心臟截形，邊緣具波狀鋸齒，其在無孢子囊羣之葉則爲羽狀深裂，長八至十二糎，寬三至五糎，無孢子囊者則尤闊，葉基部短楔形，每側具三至四羽狀裂片，各裂片圓形，全緣或稍有小波齒；孢子囊群深藏於密毛之下，子囊群蓋初爲球形，破裂後則成具長纖毛之裂片，每孢子囊群中有四至六孢子囊，孢子囊暗褐色，柄甚短。

分布： 四川，雲南，貴州。

本種屬於 Physematium 系，與 Woodsia rosthorniana Diels 相近，與之異者爲較多小形有薄毛而較長之小葉及堅硬之葉軸. 其外形在 W. polystichoides Eaton 與 W. rosthorniana Diels 之間。

圖註： 1. 植物體全形(原大). 2. 除去絨毛之葉片，示脈與孢子囊群之分布(放大五倍). 3. 小葉片之一部，示孢子囊群與子囊群蓋之排列(放大十五倍). 4. 二子囊之毛(放大百〇八倍). 5. 葉軸之毛(放大百〇八倍). 6. 葉柄基部之鱗片(放大三十五倍)。

WOODSIA CINNAMOMEA Christ

赤 色 巖 蕨

PLATE 5.

CYSTOPTERIS MOUPINENSIS Franchet

POLYPODIACEAE

CYSTOPTERIS MOUPINENSIS Franch. in Nouv. Arch. Mus. 2. 10: III (1887); C. Chr. Ind: Suppl. 46 (1913-17); Hand-Mzt. in Symb-Sinic. VI: 20 (1929).

Davalia triangularis Baker in Ann. Bot. 5: 202 (1891).

Rhizome slender, wiry, wide. creeping, subglabrous; *stipes* slender, elongate, far apart, 10-15 cm. long, greenish, glabrous; *frond* deltoid-ovate, subtripinnate, 10-17 cm. long, 6-10 cm. broad at the base, attenuate to the fine acuminate or caudate apex; pinnae all petiolate, erect-patent, 2-3 cm. apart, alternate, the basal ones lanceolate, 4-7 cm. long, 5-2.2 cm. broad, acuminate, cuneate at the base; pinnules subrhombic-ovate-oblong, about 6-11 on each side, the upper inner base straight, the lower cut away to the costa, the lower ones pinnate or deeply pinnatifid towards the base; lobes ovate, with rounded inciso-dentate apex; *texture* thin herbaceous; *sori* mostly 6-8 sometimes only 3 to each pinnule, dorsal on the veinlets; inducium glabrous, thin membranaceous, at last evanescent.

Distribution: Szechuan, Yunnan, Tibet.

A fairly uniform and distinct endemic species, closely related to *C. sudetica* A. Br. et Milde, differs in glabrous inducium, smaller frond and cutting. First discovered by Père David in Tibet, later by Delavay in Yunnan and again by Wilson in W. Szechuan. Our figure is drawn from Wilson's No. 5311.

Plate 5. Fig. 1. Habit sketch (natural size). 2. A pinnule from basal part of the pinna showing venation and sori (x 16).

第 五 圖

濱冷蕨（水龍骨科）

CYSTOPTERIS MOUPINENSIS Franchet

地下莖微弱鐵絲狀，匍匐甚廣，幾光滑；葉柄細長，柯距甚遠，色微綠，無毛，長十至十五粉，葉體三角卵圓形，幾三次羽狀分裂，長十至十七粉，基部寬六至十粉，頂部由尖至細銳尖或尾狀；一次小葉俱有小葉柄，直而開展，其間相距二至三粉，互生，在基部者呈披針形，長四至七粉，寬一·五至二·二粉，頂部尖銳，基部楔形；二次小葉幾菱卵形或卵長方形，每側六至十一枚，上內基部修直，基部下部則割截至中肋，其在下部者每至葉基又呈羽狀或深入之羽狀分裂；裂片卵圓形，具圓形而有深刻之齒之頂部；葉薄草質；孢子囊群通常每二次小葉具六至八枚，有時僅三枚，位於細脈背面；子囊群蓋無毛，薄膜質，終則失去。

分布： 四川，雲南，西藏。

此種爲一顯明特產之種，與 C. sudetica 相近，惟其子囊群蓋無毛，葉較小，而裂片亦不同，Père David 最初發見於西藏，後 Delavay 採得於雲南，Wilson 繼得之於四川，本圖則根據 Wilson 之標本而繪者也。

圖註： 1. 植物體全形（原大） 2. 小葉基部之二次小葉，示葉脈與孢子囊群（放大十六倍）。

CYSTOPTERIS MOUPINENSIS Franchet

濱 冷 蕨

PLATE 6.

DRYOPTERIS ENNEAPHYLLA (Baker) C. Christensen

POLYPODIACEAE

DRYOPTERIS ENNEAPHYLLA (Baker) C. Chr. Ind. 263 (1905); Matthew in Journ. Linn. Soc. 38:362 (1911)..

Nephrodium enneaphyllum Baker in Journ. Bot. (1887) 170; Diels in Nat. Pfl. Fam. I. 4. 168.

Caudex erect, thick as a thumb, clothed in dense reddish-brown lanceolate acuminate membranaceous scales to 2 cm. long; *stipes* tufted, stramineous, terete beneath, deeply grooved above and so is the rachis, nearly 30 cm. long, densely scaly near the base, become rather sparsely so upward, scales at the base similar to those only rhizome; *frond* deltoid-oblong, 20-30 cm. long and a little less broad, simply imparipinnate, moderately firm in *texture*, green and glabrous on both sides; pinnae 3-5 on each side, the terminal one similar to the lateral ones, shortly petiolate, lanceolate-oblong, 10-13 cm. long, 2.5 cm. broad, shallowly crenate, truncate or subtruncate at the base, blunt at the apex; *veins* in numerous pinnate subpatent groups, veinlets fine, ascending, 3-4 on each side of the lateral veins; *sori* large, in 3-4 irregular rows, almost restricted to the central half of the pinnae, leaving a broad free margin, medial on the veinlets, inducium large, peltate, brown, glabrous, with a slightly depressed centre, subpersistent.

Distribution: Hupeh, Fukien.

Rather a variable species, evidently intermediate between *D. podophylla* (Hk.) and *D. sieboldii* (van Houtte) with a much stronger approach to the latter. It was discovered by A. Henry around Ichang, W. Hupeh. Henry's No. 3217, which has rather deeply lobato-incised pinnae with truncate or subtruncate base, while Henry's No. 7881 from the same locality deviates from the type in much larger pinnae (to 17 cm. long, 3.5 cm. broad) with rounded base, only shallowly crenulato-serrate margin, and 1-2 irregularly seriate sori, confined to the inner half breadth of the pinnae. Dunn's specimen, No. 3830, from Central Fukien (1905) agrees well with Baker's type except that it has still more finely crenato-serrate margin than Henry's No. 7881, and yet it should belong here.

Plate 6. Fig. 1. Habit sketch (natural size). 2. A portion of pinna showing venation and sori (x 2). 3. A portion of pinna showing inducium and sori in situ on the veinlet and the way of insertion of sporangia (x 6). 4. Scales on the base of stipe (x 8).

第 六 圖

宜昌金星蕨（水龍骨科）

DRYOPTERIS ENNEAPHYLLA (Baker) C. Christensen

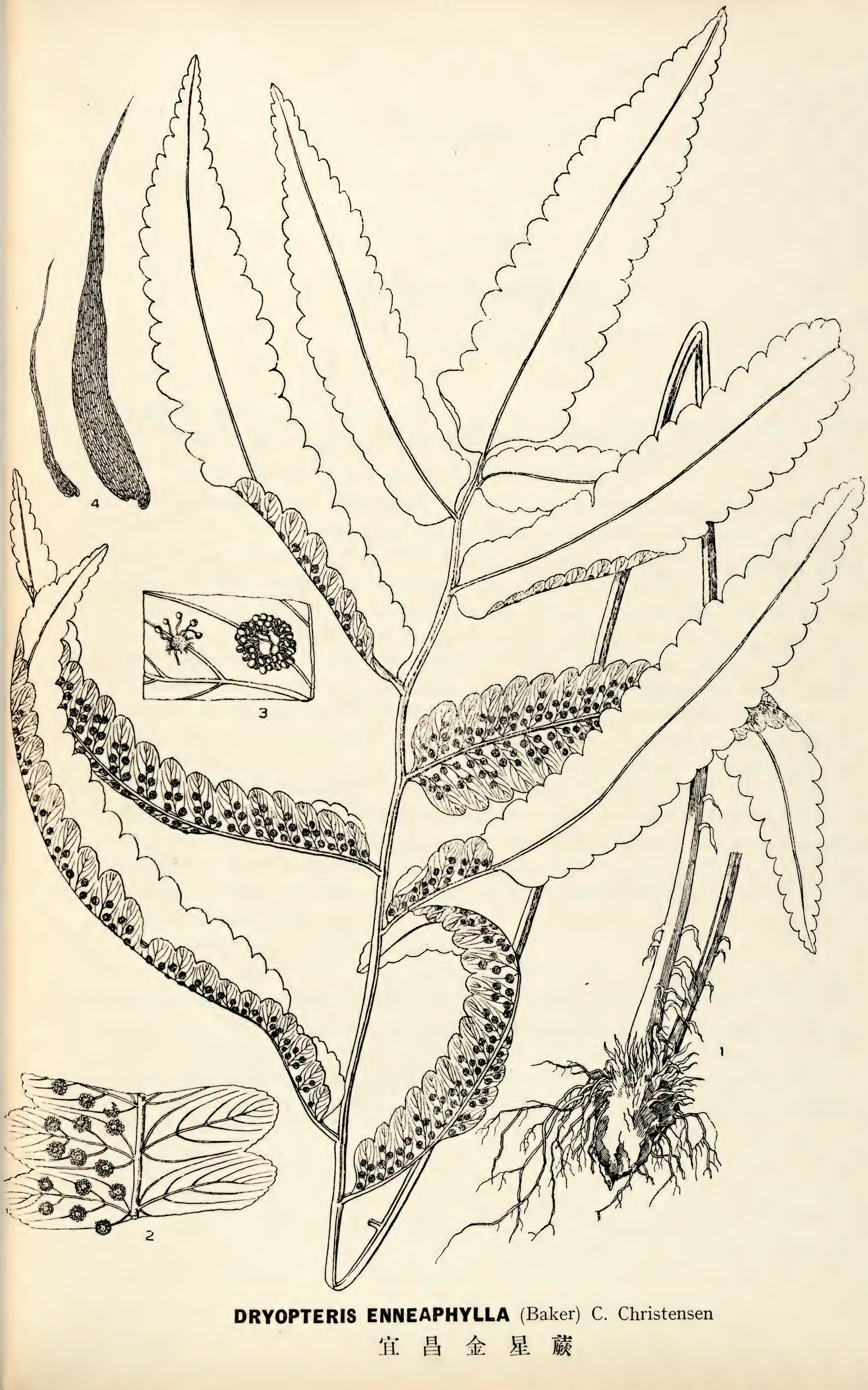
地下莖直立，大如拇指，密被鱗片，鱗片膜質，紅褐色，披針形，上部尖銳，長二粉；葉柄簇生，稻稈色，下面呈圓形，上面與葉軸俱具深槽，長幾三十粉；近基部處密覆鱗片，漸上漸稀，其在葉柄基部者，與地下莖之鱗片相同；葉身三角長方形，長二十至三十粉，寬則較高爲稍狹，一次羽狀分裂，質頗堅固，上下兩面俱綠色無毛；小葉七至十一枚，頂生者與側生者相似，具短柄，披針長方形，長十至十三粉，寬二·五粉，緣具淺波狀齒，基部截形，頂部鈍形，葉脈分佈成多數羽狀而略展開之小羣，小脈纖細而上彎，在側脈之兩側各具三至四對；孢子囊群成三至四不整齊之行列，幾全限於小葉中部之半，餘有甚闊之邊緣，位於細脈之中部，子囊群蓋大，盾狀，褐色無毛，中部略凹，幾永存。

分布： 湖北，福建。

本種爲易於變易之一種，位於 D. podophylla (Hk.) 與 D. sieboldii (van Houtte) 之間，而尤與後種相近，A. Henry 始發現於鄂西之宜昌附近，Baker 之記述，蓋根據其 3217 號之標本也，小葉具深裂片，基部截形或幾截形爲其特徵，而 7881 號亦採自宜昌附近，小葉頗大，(至一·七粉寬三·五粉)，基部圓形，僅有淺波齒之緣，孢子囊群分佈爲一至二不整齊之列，亦迄於小葉主肋至緣之半程，Dunn 在閩之中部亦採得此種標本，與 Baker 之原式頗似，與 7881 號較則僅波牙較細耳。

圖註 1. 植物全形 (原大). 2. 小葉之一部表示葉脈與孢子囊群 (放大二倍). 3. 小葉之一部表示子囊群蓋與子囊群及孢子囊附著於葉脈上之狀 (放大六倍) 4. 葉柄基部之鱗片 (放大八倍)。

Plate 6
第 六 圖



DRYOPTERIS ENNEAPHYLLA (Baker) C. Christensen

宜 昌 金 星 蕨

第 九 圖

杜 氏 耳 葉 蕨（水 龍 骨 科）

POLYSTICHUM DUTHIEI (Hope) C. Christensen

地下莖肥大直立多根；葉叢生四枚至七枚成一簇；葉柄長五粉，密生鱗片，其形可別爲二種，一種鱗片短纖維狀，另一種則呈寬大卵形，銳尖頭，長至六糎，紅黃色；葉體長十二至十五粉，中部寬一粉五至二粉五，狹長披針形，兩端漸窄，一次羽狀分裂，葉軸覆以披針形具錐頭之鱗片；一次小葉簇生，在下部者甚小，卵圓形，長四糎，中部者長至十二糎，形長圓，基部相等，邊緣反卷，波齒狀，基部楔形或心臟形，葉體爲厚革質，黃綠色，上部具疎鬆白色緊貼剛毛狀之鱗片，下部惟中肋附近密生大形披針形褐色之鱗片，在脈絡附近者則略小，作狹長披針形，膜質，長至二糎；脈紋內陷不顯明，近基部處歧出或略成羽狀；子囊群中肋兩側各三四枚，其形幾圓，不顯明，子囊群蓋大，質薄，褐色，最易脫落。

分布： 雲南，四川，印度西北部亦有之。

註： 本種經 Hope 氏採自印度西北部者其形比中國西部所產爲小，本種性質與 P. lachensee (Hk.) Bedd. 相近，而本種之葉柄較短葉軸較硬，且上部密生大形鱗片，及平鋪之剛毛狀之鱗片，葉片爲厚革質，此其不同之點也，因 Père Delavay 氏於 1884 年採自雲南冰川之麓，故 Christ 名之爲 P. glaciale, 後 Christensen 仍歸納之於 P. duthiei 云。

圖註： 1. 植物全體 (原大) 2. 葉體中部之小葉上面 (放大四倍) 3. 同上之背面 (放大三倍) 4. 同上示其托及子囊群附着狀況 5. 小葉之一部示子囊群之托及數鱗片 (放大十五倍) 6. 葉背面之鱗片 (放大十六倍) 7. 葉軸上之鱗片 (放大十六倍) 8. 葉軸上之小形鱗片 (放大十六倍) 9. 葉上面之鱗片 (放大十六倍) 10. 葉柄下之鱗片 (放大十六倍)。

PLATE 7.

ASPIDIUM LONGICRURE Christ

POLYPODIACEAE

ASPIDIUM LONGICRURE Christ in Bull. Geogr. Bot. Mans. (1909) Mém. xx. 169; C. Chr. Ind. Suppl. 8 (1906-13); Matthew in Journ. Linn. Soc. 39: 343 (1911).

Sagenia longicrure Christ in Bull. Geogr. Bot. Mans. (1906) 250.

Stipe to 30 cm. or more long, shining, reddish-brown, glabrous; *frond* deltoid-oblong, 40 cm. long, 35 cm. broad, bipinnate to tripinnatifid in the lower part, rachis and the base of costa shining, light ebeneous, deeply grooved above; terminal pinna large, petiolate, deeply trilobate, deltoid, the central lobe oblong, 15-30 cm. long, 5-10 cm. broad, margin coarsely repando-lobulate, with the base of lobes broadly adnate, cuneat-elongate, repand; lateral pinnae 3 on each side, opposite, 12-16 cm. apart, the lower ones 14 cm. long, the uper ones 8 cm. long, long-petiolate, the uppermost ones subsessile, oblong, caudate, with obtuse hastate base, the middle pinnae deeply 3-lobed down to the base, the lowest pinnate; pinnules 2, farapart, petiolulate, with hastate or deeply lobed base, the terminal pinnules deeply trilobate; all pinnae ascendingly patent, the uppermost pinnules to 10-13 cm. long, 4 cm. broad, margin repando-crenate, all pinnae and pinnules acuminate, or long caudate; lateral *veins* prominent, almost reaching the margin, areolae irregularly quadrangular, in 2-3 rows between main veins and about 6 between costa and margin, usually without free included veinlets; *sori* very numerous, campital or dorsal, small, almost punctate, dark brown, irregularly disposed, inducium destitute; *texture* thin herbaceous, lustrous green, surfaces naked but the costa and veins are shortly pubescent.

Distribution: Kweichow, Kwangsi.

A bipinnate species of the group of *A. cicutarium Sw.*, very distinct in pinnae and lower pinnules being long-petiolate, narrowly elongate, few-lobed pinnules and segments with very long-acuminate apex, stipes and rachis reddish-ebeneous, polished, and very small irregular exinduciate sori. Collected for the first timê by Père Cavalerie in Kweichow, (1904), later by J. Esquirol in the same locality and of very late from Kwangsi.

Plate 7. Fig. 1. Habit sketch of a portion of frond (natural size). 2. A portion of segment, showing venation and sori (x 8). 3. Sporangium (x 106).

第七圖

燕尾三叉蕨（水龍骨科）

ASPIDIUM LONGICRURE Christ

葉柄長達三十粉，或較長，光澤無毛，褐紅色；葉體薄膜質，鮮綠色，僅肋及脈上有短毛，三角長方形，長四十粉，寬三十五粉，生在較下部者爲二次羽狀複葉至三次羽狀分裂，肋軸與肋基俱光澤，淡黝色，上面具深槽，生於頂上者大而具小柄，深入三裂，三角形，中部裂片長方形，長十五至三十粉，闊五至十粉，緣有粗而不整齊之微裂，裂片下部併生，楔形修長，緣不整齊，側生之一次小葉在每側各三枚，對生，其間相距十二至十六粉，最下者長十四粉，其上者長八粉，具長柄，最上者幾無柄，長方形，頂部尾狀，基部鈍戟形，二次小葉二枚，相距頗遠，微有柄，基部戟形，或深裂，長十至十三粉，緣具不整齊之波狀齒，與一次小葉同具尖銳或長尾狀之頂部，側脈顯明，幾達於葉緣，孢子囊孔呈不整齊之四角形，成二至三列介於側脈間，中肋至葉緣之間可容六枚，常無游離之細脈，孢子囊群頗多生邊緣小脈上或背上，小而作點狀，黯褐色，呈不整齊之排列，無子囊群蓋。

分布： 貴州，廣西。

本種爲 A. cicutarium 系中具二次羽狀複葉之一種，最顯明者在其一次小葉與下部之二次小葉俱長狹而有長柄，二次小葉之略分裂者與各裂片俱具長尖銳之頂部，葉柄葉軸俱赤黝色，有光澤；孢子囊群微小不整齊，此種 1904 年 Père Cavalerie 始發見於貴州，後 Père Esquirol 亦在貴州採得之，最近則見諸廣西。

圖註： 1. 植物體之一部(原大) 2. 葉體之一部，示脈與子囊群(放大八倍) 3. 孢子囊(放大百零六倍)。

Plate 7
第七圖

ASPIDIUM LONGICRURE Christ

燕 尾 三 叉 蕨

PLATE 8.

ASPIDIUM EBENIUM C. Christensen

POLYPODIACEAE

ASPIDIUM EBENIUM C. Chr. Bull. Geogr. Bot. Mans (1913) 138; Ind. Suppl. 5 (1913-16).

Stipes and rachis shining, ebeneous, very shortly tomentose on the upper side; *frond* ample, deltoid, about 70 cm. long, 60 cm. broad at the base, dark green; *texture* thin herbaceous, costa like the rachis very shortly reddish-tomentose on the upper side, otherwise the entire plant glabrous, bipinnate to tripinnatifid; the lower 2 pairs of pinnae petiolate, alternate, 15 cm. apart, the upper 2 sessile but free, the uppermost broadly adnate or confluent upward, connected by a wing 1-3 cm. broad, the basal pinnae much the largest, pinnate below into sessile or adnate pinnules, pinnatifid upward into 6-8 segments connected by a wing 1-1.5 cm. broad, the basal 2 free pinnules 10-17 cm. long, 5-6 cm. broad, oblong-lanceolate, acuminate, cuneate-rounded at the base, pinnatifid half way down, the middle segments about 10 cm. long, 3-5 cm. broad, broadly lobed or pinnatifid; lobes subfalcate, obtuse, broadly crenate, 1-1.5 cm. broad; the middle pinnae and the segments below the apex of the frond pinnatifid in the similar manner as the basal pinnae; *veins* distinct, reticulate, areolae 5-6-gonous, usually with included free veinlets; *sori* subirregular, on the ultimate lobes, uniseriate, 7-3 on each side of the costule, leaving a broad blank space in the middle, inducium corrugated, persistent, peltate, dark brown.

Distribution: Kweichow.

A large fern in the genus closely allied to *A. cicutarium* Sw., differs only in shining ebeneous stipe, rachis and costa, and in inferior pinnules shorter than those next above. Collected in Kweichow under forest by Père J. Esquirol, 1910.

Plate 8. Fig. 1. Habit sketch of a portion of frond, (natural size). 2. A portion of ultimate segment, showing venation and sori.

第 八 圖

黑柄三叉蕨（水龍骨科）

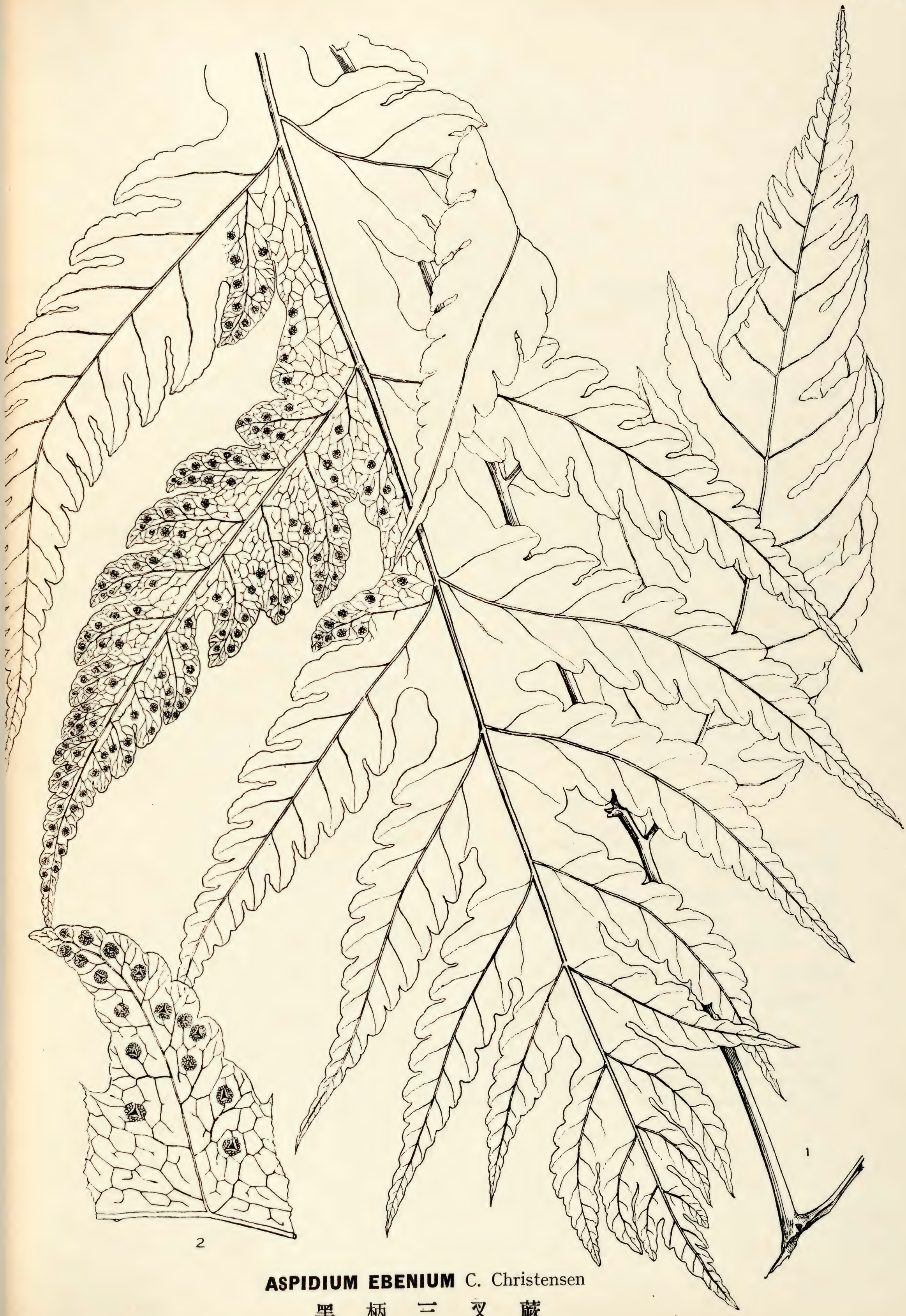
ASPIDIUM EBENIUM C. Christensen

葉柄及葉軸深黑色有光澤，上面具短絨毛；葉體三角形頗大，長約七十粉，底部寬約六十粉，深綠色，薄膜質，主脈亦具緋色之短絨毛，此外則全部光滑，二次至三次羽狀分裂，最下二對一次小葉有柄互生，相距約十五粉，上部二小葉無柄，至最上之小葉則基部連合或連合其較上部分，中間聯絡之翼寬一至三粉；底部之一次小葉最大，羽狀分裂至下部成無柄或合着之二次小葉，上部裂片六至八個，各裂片間有翼相連，翼寬一粉至一粉半，底部兩獨立二次小葉長十至十七粉，寬五至六粉，作長方披針形，漸尖頭底，部圓楔形，羽狀分裂至一半，中間裂片約長十粉，寬三至五粉，有寬裂片或羽狀分裂，裂片略呈鐮形，鈍頭有闊鈍鋸齒 長一至一粉半，中部一次小葉與頂部下之裂片作羽狀分裂與基部一次小葉略同；脈紋顯明，網狀，網孔作五或六角形；子囊群不甚規則，在最頂部之裂片上，成單行，延中肋而生，左右各有七個至三個，中間留有甚闊之空隙；子囊羣蓋永存，盾狀，深褐色。

分布：貴州。

本種爲本屬中最大之種，與 A. cicutarium Sw. 一種相近，而其異點則在黝黑光澤之葉軸與中肋，而下部二次小葉較其上者略短耳，本種最初爲 Père J. Esquirol 于一千九百有十年採於貴州森林中。

圖註： 1. 全植物之一部（原大） 2. 上部之葉片，示其脉絡及子囊群。



ASPIDIUM EBENIUM C. Christensen

黑 柄 三 叉 蕨

PLATE 9.

POLYSTICHUM DUTHIEI (Hope) C. Christensen

POLYPODIACEAE

POLYSTICHUM DUTHIEI (Hope) C. Chr. Ind. 72 (1905), 581 (1906); Medd, Göteb. Bot. Trädg 1:94 (1924); Hand-Mzt. in Symb. Sinc. vi. 26 (1929).

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Polystichum glaciale Christ in Bull. Soc. Bot. Fr. 52. Mém. 1. 28 (1905).
Sorolepidium glaciale Christ in Bot. Gaz. 51:350 c. fig. (1911).

Rhizome thick, erect, densely rooted; leaves tufted (4-7 together), *stipes* 5 cm. long, covered with dense dimorphic scales, the one short, fibrillose, the other broad, ovate, acuminate, 6 mm. long, ochraceous-yellow; *frond* 12-25 cm. long, 1.5-2.5 cm. broad at the middle, linear-lanceolate, tapering to both ends, simply pinnate, rachis thickly clothed with lanceolate subulate scales; pinnae conferted, the lower ones much reduced, ovate, 4 mm. long, the middle ones to 1.2 cm. long, oblong, equal, margin strongly reflexed, crenate, truncate or cordate at the base; *texture* thick coriaceous, greenish-flavescent, villose with whitish adpressed setaceous scales above, the under surface clothed in dense large lanceolate brown scales from the costa and the smaller ones from the veins, the scales lanceolate-linear, scarious, 2 mm. long; *veins* entirely hidden, forked or subpinnate near the base; *sori* 3-4 on each side of the costa, almost rounded, hidden, inducium large, thin, brown, very fugaceous.

Distribution: Yunnan, Szechuan, also N. W. India.

Hope's type from N. W. India was a much smaller plant than the plant from W. China. In general habit, this species resembles *P. lachenense* (HK.) Bedd., differs in much shorter stiff stipe and stouter rachis, the dense covering of disproportionally large scales, the adpressed white setae on the upper surface and thick coriaceous texture. Its first record from China was credited to Père Delavay, who found it in 1884 at the foot of a glacier in Su-kiang, Yunnan, for which reason, Christ called the plant *P. glaciale* by referring to Hope's *P. duthiei*, to which it was finally reduced by Dr. Christensen.

Plate 9. Fig. 1. Habit sketch (natural size). 2. A pinna from middle part of the frond, upper side (x 4). 3. The same, under side (x 3). 4. The same, showing venation and attachment of sori. 5. A portion of the pinna, showing receptacles of sori with a few scales attached (x 15.). 6. Scale from the under side of pinna (x 16). 7. Scale from rachis (x 16). 8. Smaller scale from the rachis (x 16). 9. Scale from the upper side of the pinna (x 16). 10. Scale from lower part of the stipe (x 16).

POLYSTICHUM DUTHIEI (Hope) C. Christensen

杜 氏 耳 葉 蕨

PLATE 10.

POLYSTICHUM ACANTHOPHYLLUM (Franch.) Christ

POLYSTICHUM ACANTHOPHYLLUM (Franch.) Christ in Bull. Soc. Bot. Fr. 52: Mém I. 30 (1905); C. Chr. Ind. 575 (1906); Matthew in Jour. Linn. Soc. 39: 384 (1901).

Aspidium acanthophyllum Franch. in Bull. Soc. Bot. Fr. 32: 28 (1885).
Polystichum aculeatum Schott. var. *acanthophyllum* Bedd. in Handb. Suppl. 43 (1892).

Caudex short, erect; *stipes* fasciculate, 3-8 cm. long, stramineous, angular, densely paleaceous, paleae yellow, concolored, dimorphic, the one narrow, linear, the other broadly ovate, abruptly cuspidate, slightly imbricate; *frond* narrowly lanceolate, acuminate, slightly reduced downward, 10-20 cm. long including the stipe, scarcely 2.2 cm. broad, bipinnatifid or bipinnate below under the pinnatifid apex, rachis densely scaly, scales yellow, linear-setaceous; pinnae subsessile, close, imbricate, somewhat distant below, *texture* rigidly coriaceous, lustrous green above, pale below, glabrous, ovate, 2-4 on each side, cut straight on the inner side and parallel to the rachis, margin thickened, strongly revolute, apex rigidly spinescent; *sori* uniseriate, dorsal on lateral veinlets, closer to the costa of pinnae or costules on basal pinnules or lobes, dark brown, inducium peltate, orbicular, margin slightly erosed.

Distribution: Yunnan, Szechuan.

Habit of *P. aculeatum* Schott., but of much smaller size, thick coriaceous texture and simpler pinnae. Evidently an alpine plant of xerophytic habit. A fairly common fern in Yunnan and Szechuan, as it has been reported by many collectors from that region since its discovery by Delavay in 1882.

Plate 10. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori. 3. Two inducia, a, front view; b, lateral view (x 16). 4. Scales from rachis, (x 27). 5. Scales from rhizome (x 27).

第 十 圖

刺 耳 葉 蕨（水 龍 骨 科）

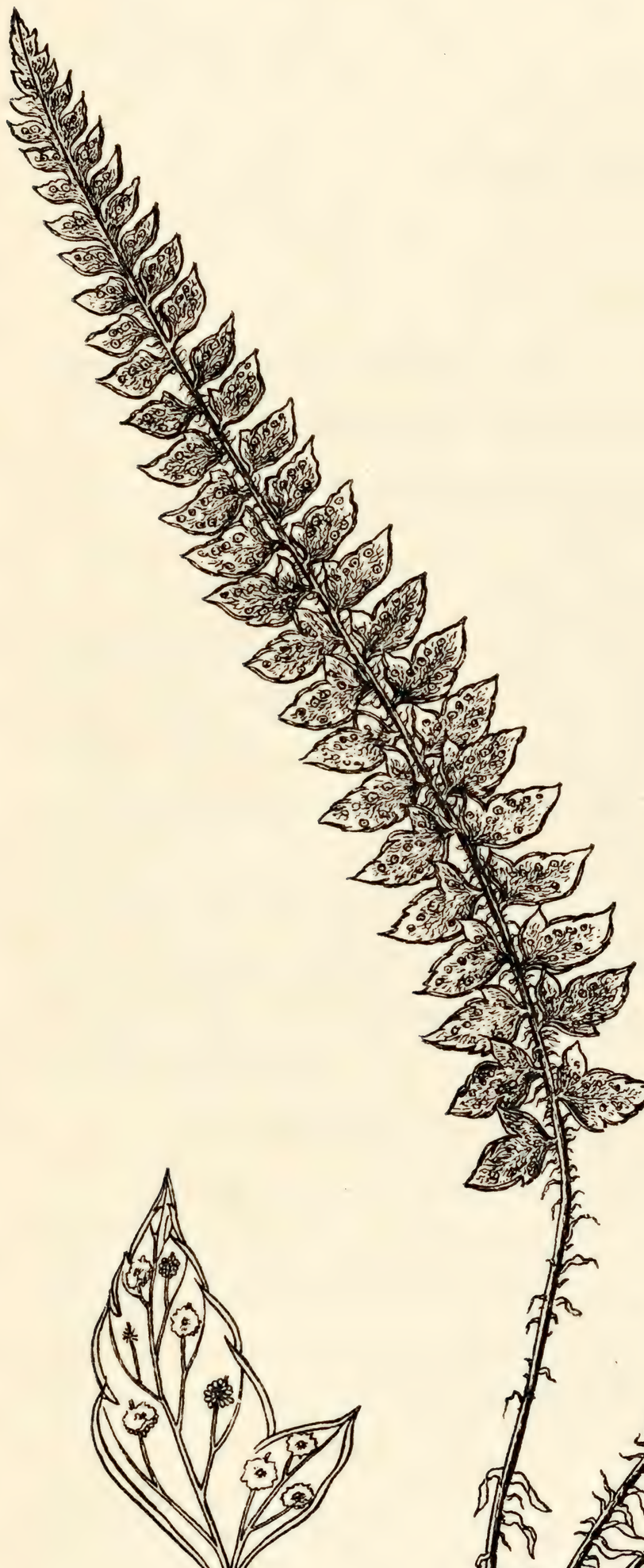
POLYSTICHUM ACANTHOPHYLLUM (Franch.) Christ

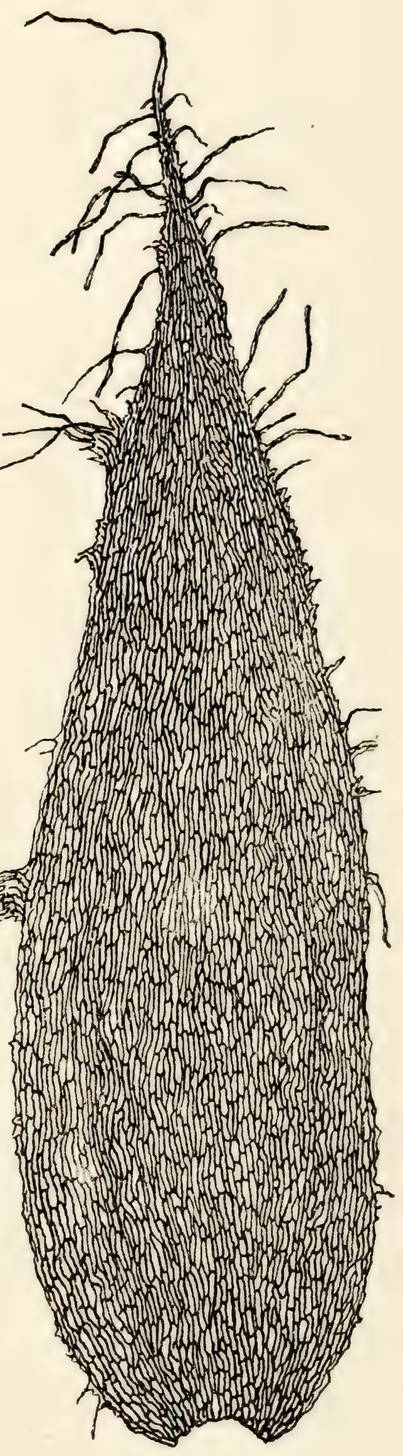
莖根部短而直立；葉柄簇生，長三枌至八枌，稻桿色，有楞，密生小枇糠狀鱗片，鱗片黃色，具一色，形式不一，一種細長線形，他種寬大卵形，突成尾狀尖頭，疎散包覆；葉體窄披針形，漸尖頭，下部略縮小，長十至十二枌，全部二次羽狀分裂或上部二次下部簡單羽狀分裂，寬至二枌二糎，葉軸密覆以鱗片，鱗片黃色線形剛毛狀；一次小葉略具短柄或無柄，密集，互相掩覆，在下部則稍疏，硬革質，上面光澤綠色，下面略淺而平滑，卵圓披針形，寬六至八糎，略具羽狀裂片；裂片卵圓形，每側各具二枚至四枚，由中肋分裂，與葉軸平行，邊緣較厚，向內卷，頂部呈剛刺狀；子囊群成單列，生於支脈之上面，近小葉片之中肋或基部小裂片之肋深褐色，子囊群蓋盾狀，圓形，邊緣微有缺刻。

分布： 雲南，四川。

本種之形態似 P. aculeatum Schott., 但較之殊小，而爲革質，且葉之分裂比較單簡，此其異點也，就此而言本種實具抗旱性之高山植物也。在雲南及四川兩省甚爲普通，初爲 Delavay 氏在 1882 年採得。

圖註： 1. 植物之全體 (原大) 2. 一次小葉示葉脈及子囊群 3. a，子囊群蓋之前面 (放大十六倍) b，同上側面 (放大十六倍) 4. 葉軸上之鱗片 (放大二十七倍) 5. 地下莖之鱗片 (放大二十七倍)。





POLYSTICHUM ACANTHOPHYLLUM (Franchet) Christ

刺 耳 葉 蕨

PLATE II.

POLYSTICHUM DELTODON (Baker) Diels.

POLYPODIACEAE

POLYSTICHUM DELTODON (Baker) Diels in Nat. Pfl. Fam. I. 4. 191; C. Chr. Ind. 580 (1905); Matthew in Journ. Linn. Soc. 39: 385 (1911).

Aspidium deltodon Baker in Gard. Chron. n. s. 14: 494 (1880).
Hemesteum deltodon Léveille, Flore du Kouy-tscheou 496 (1915).

Rhizome short, erect, scales sparse, small, dark brown, lanceolate, acuminate, membranaceous, basal, rarely extending higher up; *stipes* tufted (5-10 together), 5-15 cm. long, slender, naked, stramineous; *frond* linear, elongate, simply pinnate, 10-20 cm. long, 2.5 cm. broad, scarcely narrowed downward, glabrous, moderately firm in *texture;* rachis subglabrous with a few small adpressed deltoid dark brown scales; pinnae close, sessile, 20-25 on each side, quadrate-ovate, cut straight on the inner side and strongly auricled on the upper, apex rounded, cuspidate, denticulate on the upper edge, usually entire on the lower; *veins* inconspicuous, pinnate, once forked; *sori* supra-medial, small, dark brown, usually confined to the outer half of the pinnae, 3-6 to a pinna, inducium small, glabrous.

Distribution: Szechuan, Yunnan, Hupeh, Kwangsi, and also Formosa.

This fern was first collected by Maries in Ichang Gorge, about 20 li to the west of the city of Ichang, Hupeh. It is closely related to *P. auriculatum* Presl, differs only in short deltoid pinnae with few short rather stout teeth.

Plate II. Fig. 1. Habit sketch, (natural size). 2. A pinna showing venation and sori (x 3). 3. A sorus with inducium attached (x 16). 4. A sporangium (x 52).

第十一圖

對生耳葉蕨（水龍骨科）

POLYSTICHUM DELTODON (Baker) Diels

地下莖短而直立，疎被鱗片，鱗片形小，暗褐色，披針形，漸尖頭，薄膜質，多生基部，稀有延展至上部者；葉柄叢出，五枚至十枚，長五至十五粉，寬二粉半，下部略窄，光滑，質殊堅硬；葉軸幾光滑，具少數緊貼三角形暗褐色之鱗片；一次小葉密接而生，無柄，兩側各二十至二十五枚，略呈方卵圓形，內邊直截，上有大耳，頂部圓形，具尾狀尖頭，上邊有鋸齒，下邊通常全緣，脈紋不顯，羽狀，支脈一次分叉，子囊群生在中部之上半，形小，暗褐色，常限於小葉之外半部，每小葉具三至六枚，子囊群蓋小而光滑。

分布： 四川，雲南，湖北及臺灣。

本種最早由 Maries 氏採於離宜昌城二十里之宜昌峽，其性質與 P. auriculatum Presl 相近而本種之短小三角形之小葉具少數短而頗堅之齒則又與後者不同。

圖註： 1. 植物全形之一部（原大） 2. 一次小葉示其脈紋及子囊群，（放大三倍） 3. 子囊群及子囊群蓋之一部（放大十六倍） 4. 孢子囊（放大五十二倍）。

POLYSTICHUM DELTODON (Baker) Diels

對　生　耳　葉　**蕨**

PLATE 12.

POLYSTICHUM HECATOPTERUM Diels

POLYPADIACEAE

POLYSTICHUM HECATOPTERUM Diels in Engl. Jahrb. 29: 193 (1900); C. Chr. Ind. 582 (1906); Mathew in Jour. Linn. Soc. 39: 386 (1911).

Polystichum auriculatum Presl var. *stenophyllum Baker* in Jour. Bot. (1888) 227.
Hemesteum hecatopterum Léveille, Flore du Kouy-tscheou 496 (1915).

Rhizome short, erect, thick as raven's quill, clothed like the stipes with moderately dense membranaceous brown dimorphic scales, the one broad lanceolate, the other linear-subulate, both are hair-pointed; *stipes* tufted (3-4 together), slender, terete beneath, bisulcate above, 5-15 cm. long; *frond* elongate linear, gradually tapering towards both ends, 20-35 cm. long, 2-3 cm. broad at the middle, pinnate; pinnae 40-50 on each side, 1.2-2 cm. long, ½ cm. broad, close or subimbricate, subrhombic-oblong, gradually deflexed downward, but the upper ones horizontally patent, the upper inner side straight and parallel to the rachis, much produced into a triangular auricle, provided at the apex with a bristle, the lower side cut away to the costa, apex rounded, margin spinuloso- or aristatato-denticulate; *veins* inconspicuous, fine, pinnate, regularly once forked, except those towards the apex which are simple, the upper pinnae fertile; *sori* between the costa and margin, mostly 6-10 on the upper side and none or 2-4 on the lower side of the costa, inducium rounded, peltate, smaller than the sori, attached by the centre, which is slightly depresed and blackish.

Distribution: Szechuan

This is a uniquely distinct species, well marked by short scaly stipe and pectinately close oblong pinnae with 8-10 often incurved long-aristate teeth on each side, the lower pinnae considerably abbreviated and strongly deflexed. This pretty fern was first discovered by Rev. Earnst Faber on Omei Shan early in 1886 and described two years later by Baker as *Aspidium auriculatum* Sw. var. *stenophyllum* in following words: "Approaching to *Aspidium lonchitis* in habit, with a frond a foot long and scarcely above an inch broad at the middle, with subrhomboidal spinulose conspicuously auricled pinnae much cut away on the lower side of the midrib" (Jour. Bot. XXVI. 227, 1888). It was, however, not until 1900 when Herr von Rosthorn's plants collected in Tapao Shan, in Nan-chuan, S. E. Szechuan (1891), was brough under the notice of Dr. Diels, who gave the name as it bears to-day, not quite sure then as to the identity of his species to Baker's var. *stenophyllum*. I have seen Faber's plant (No. 1305) in Hongkong Herbarium and found it is typical of Diels' species except with longer stipe (-12 cm.). Ample materials collected by Wilson in W. Szechuan show that fronds even from same rhizome may vary from 2-3-4 cm. in width, and it is with the broadest frond that the species somewhat approaches *P. auriculatum* Presl in habit but for long-aristate teeth and more sharp auricle. Evidently a fairly common fern in Szechuan, particularly on Omei Shan.—R. C. C.

Plate 12. Fig. 1. Habit sketch (natural size). 2. A pinna from the middle part of the frond, showing venation and sori (x 3). 3. A portion of the pinna, showing venation, sori and scales attached (x 12). 4. Scales from the stipe. (x 31) 5. Scale from the rachis (x 31). 6. Sporangium (x 145).

第十二圖

鋸齒耳葉蕨（水龍骨科）

POLYPODIUM HECATOPTERUM Diels

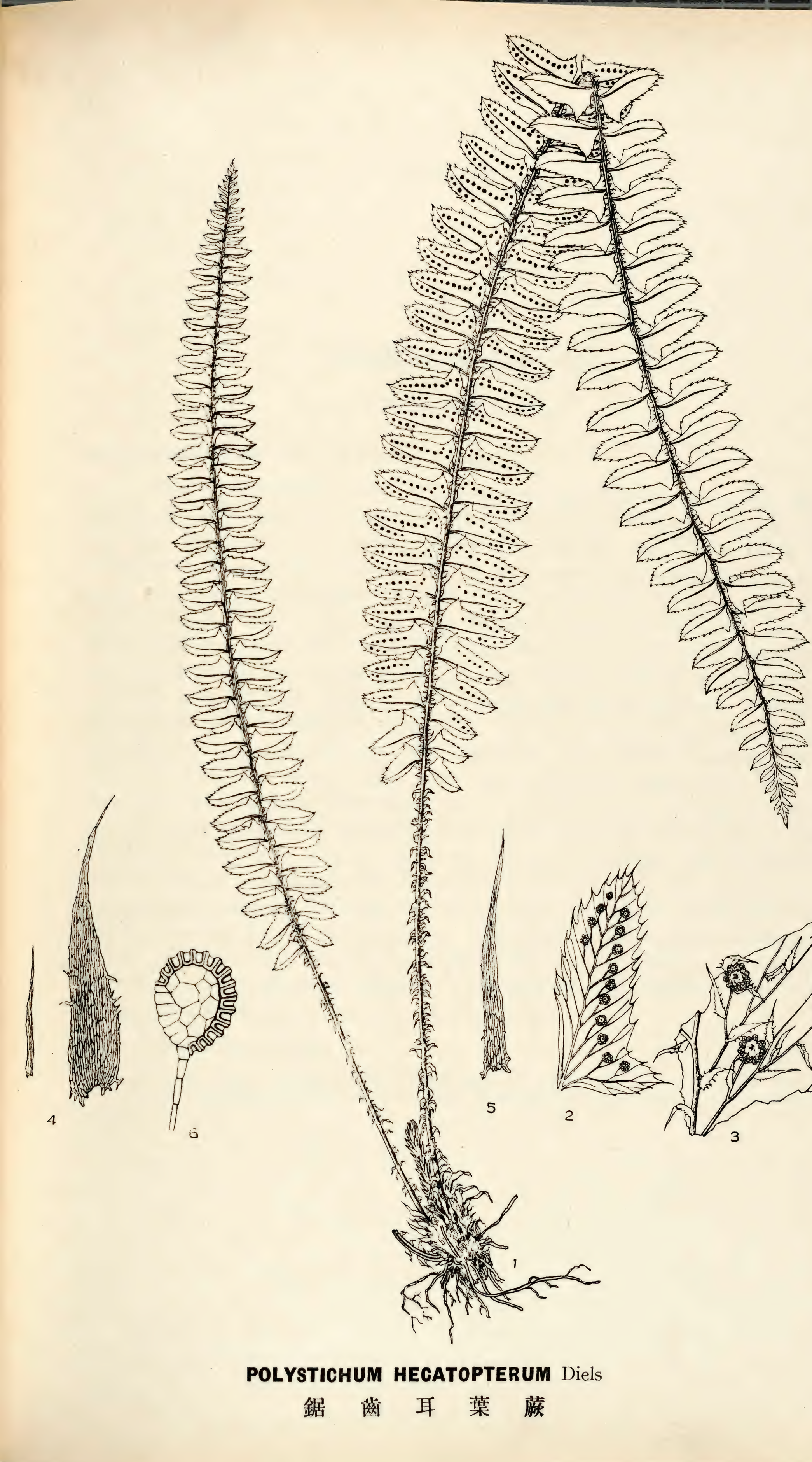
地下莖短，直立，寬如鴉喙，密覆以薄膜質褐色具兩種形態之鱗片，鱗片一種寬披針形，他種尖線形，皆具鬚毛狀頂端；葉柄三四枚叢生，細瘦，下面頗圓，上面具兩條深溝，長五至十五粉；葉體長線形兩端漸尖，長二十至三十五粉，寬二至三粉，一次羽狀分裂；一次小葉每側各約四十至五十個，小葉長十二至二十糎，寬五糎，密生或略相掩覆，略成長菱形，下部小葉漸向下彎，但上部者則平伸而出，小葉上方之內邊與葉軸平行，形成一三角形之耳，其尖端具刺，下方至中肋而削去，小葉之尖端圓形，邊緣具有刺頭之小鋸齒；葉脈甚細不顯明，支脈羽狀，作頗規則之一次分叉，但近頂部之支脈則爲單行，上部之葉片具子囊群，子囊群生於中肋及葉緣之間，在中肋之上方有六至十個，下方有二至四或全無，子囊群蓋圓形，盾狀，小於子囊群，中央附着點略陷入，深褐色。

分布： 四川。

本種爲最特殊之種，其短而有鱗片之葉柄密生櫛狀長圓形之小葉，每側具八枚至十枚彎曲而有長刺之鋸齒，及下部漸向下彎之小葉，皆爲最顯著之特性也。本種標本早經 E.Faber 氏採自峨嵋，Baker 氏定之爲 Aspidium auriculatum Sw. var. stenophyllum. 至 1900 年 Von Rosthorn 氏又採之於南川，由 Diels 定今名，但當時尙不知與 Baker 氏之變種是一是二也，前著者於香港植物園中得見 Faber 氏所採之標本，其葉柄似較 Diels 之記載略長，本種之具寬葉者似與 P. auriculatum 之習性相近，但本種尖銳之齒及上方深刻之耳狀裂片則又與後者不同，此種在四川分布甚廣，尤多見諸峨嵋山。一仁昌

圖註： 1. 植物全形（自然大） 2. 一生於中部之一次小葉示其脈絡及子囊群（放大三倍） 3. 一次小葉之一部示脈紋，子囊群及鱗片（放大十二倍） 4. 葉柄上之鱗片（放大三十一倍） 5. 葉軸上之鱗片（放大三十一倍） 6. 孢子囊（放大一百四十五倍）。

Plate 12
第十二圖



POLYSTICHUM HECATOPTERUM Diels

鋸　齒　耳　葉　蕨

PLATE 13.

POLYSTICHUM CHUNII Ching

POLYSTICHUM CHUNII Ching in Sinesia 1:2 (1929).

Rhizome thick strong, woody, rather short, oblique-ascending; scales large, dense, imbricate, membranaceous, ferruginous, broad ovate, long acuminate, 6-10 mm. long, 3-5 mm. broad; *stipes* fasciculate, 5-10-clustered, 8-12 cm. long, 2 mm. thick, rufo-stramineous, densely clad in dimorphic scales, the one similar to the rhizomatic ones, the other smaller, fibrillose-subulate or linear-subulate, extending throughout the rachis; *fronds* linear-lanceolate, 35-42 cm. long (including stipes 9-11 cm. long) 4.2-5 cm. broad, bipinnate, abbreviate towards base, long attenuate towards apex, gemmiferous and radicant at tip or a considerable distance backward; gemmae globular, densely clad with imbricate scales similar to the rhizomatic ones; pinnae subsessile, alternate or sub-opposite, rather conferted, horizontally patent, with the lower ones deflexed, numerous, 30-35 on each side of the rachis, glabrous above, fibrillose beneath, clad at the point of insertion beneath with a few ovate, acuminate, ciliate scales, 2-2.5 cm. long, 1 cm. broad at base, oblong-lanceolate, pinnate (except the terminal ones which are only aristate-crenate, or -serrate) below the middle, pinnatifid towards apex, strongly auricled on the anterior side; i.e., the basal pinnule on the upper side of the costa much the largest with its inner side cut parallel to the rachis with aristato-acute apex; pinnules 5-7, conferted, basal ones free, sessile, upper ones adnate, rhomboidal-ovate, entire or crenate, rounded and aristate at apex; *texture* thick coriaceous, shining green above, pale below; *veins* inconspicous, lateral veinlets in the pinnules 3-5-jugate, free, mostly once-forked; *sori* small, uniseriate, 2-3 on each side of the costule, medial, dorsal on the veinlets, indusium small, coriaceous, persistent.

Distribution: Kwangsi.

Plate 13. Fig. 1. Habit sketch, natural size. 2. A pinna (x 2). 3. A pinnule from the base of pinna, showing venation and sori (x 12). 4. Scales from stipe (x 24). 5. Scale from rachis (x 24).

第十三圖

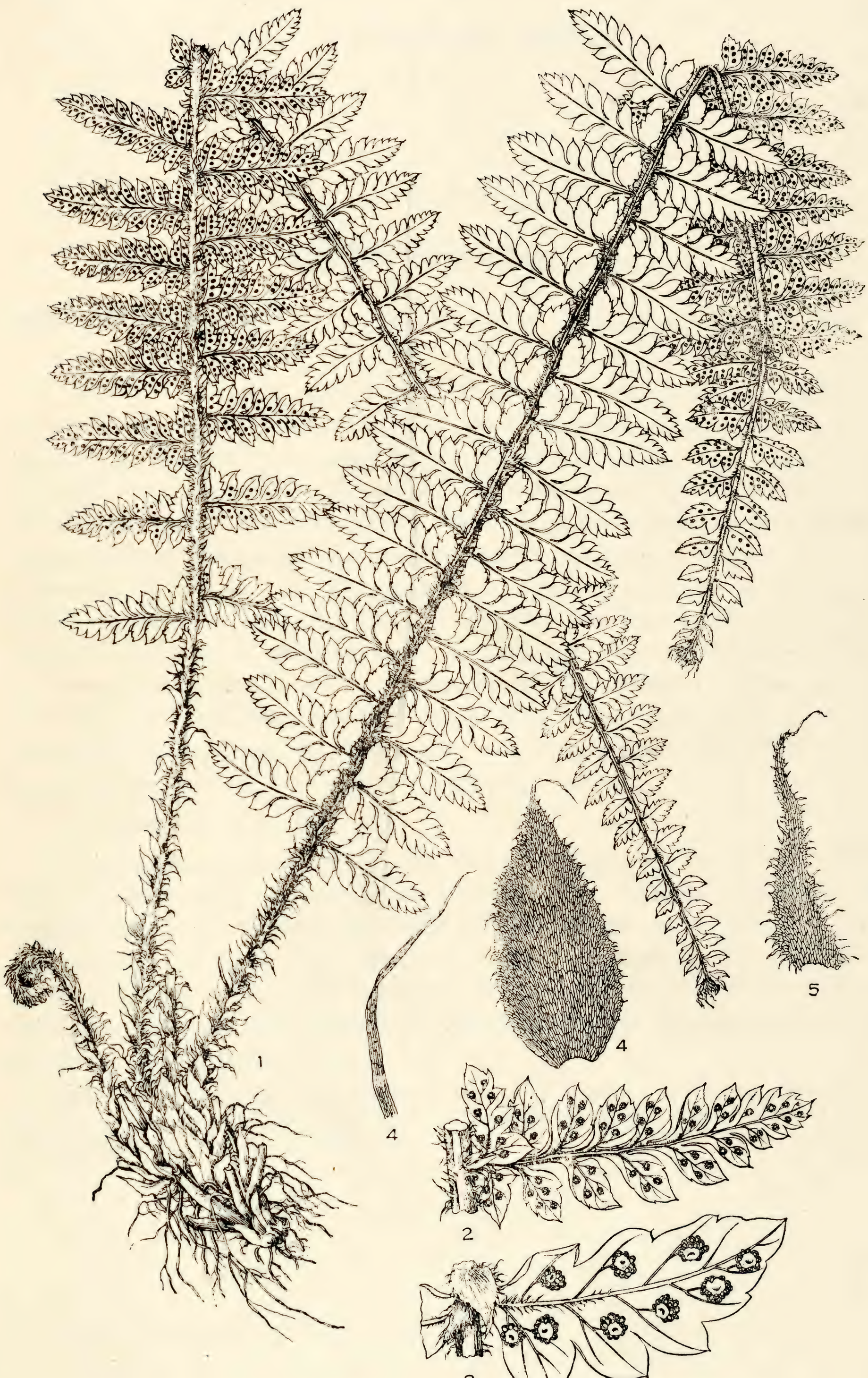
陳氏耳葉蕨（水龍骨科）

POLYSTICHUM CHUNII Ching

地下莖肥壯，木質，頗短，向上斜伸；鱗片大，密生，覆瓦狀排列，膜質，鑷赤色，闊卵形，長漸尖頭，長六至十粉，闊三至五粉；葉柄簇生，成五至十叢，長八至十二粉，粗二粍，紅稻稈色，密被異形之鱗片，鱗片一種似地下莖者，一種較小，纖維針狀或尖線狀，延至葉軸之上；葉體線狀披針形，連葉柄共長三十五至四十粉，闊四•二至五粉，二次羽狀，向基部縮小，向頂部狹長，在頂部或較下之處發芽生根，芽圓形，密生如地下莖上所生之鱗片；一次小葉幾無柄，互生或幾對生，頗密集，橫開張，下部者向下彎，在葉軸每側有三十至三十五枚，上面光滑，下面被纖維狀鱗片，在與下面葉軸連接處被有數個卵圓形尖頭有纖毛之鱗片，長二至二•五粉，基部闊一粉，長圓披針形，下部成羽狀複葉，頂端者僅有芒狀波齒或鋸齒，近頂部則羽狀分裂，在前顯成耳狀；二次小葉五至七枚，密集，生基部者獨立，無柄，生上部者基部附著，菱形卵圓形，全緣或具波狀，頂部圓而作芒狀；葉體厚革質，上面光綠色，下面較淺；葉脈不顯明，二次小葉上之支脈三至五對，分離，通常一次分叉；孢子囊群小，一列，在中肋兩側各二至三枚，生支脈背面之中部，子囊羣蓋小，革質，永存。

分布：廣西。

圖註：1. 植物全形（自然大） 2. 一次小葉（放大二倍） 3. 一次小葉基部之二次小葉，示葉脈與孢子囊（放大十二倍） 4. 葉柄上之鱗片（放大五倍） 5. 葉軸上之鱗片（放大二十四倍）。



POLYSTICHUM CHUNII Ching

陳　氏　耳　葉　蕨

PLATE 14.

CYRTOMIUM HEMIONITIS Christ.

CRYOTMIUM HEMIONITIS Christ in Bull. Geogr. Bot. Mans. (1900) 138; Chr. Ind. Suppl. 101 (1906-13).

Rhizome oblique or erect, thick as man's finger, black, covered with the vestiges of persistent stipes; leaves fasciculate (3-6 together); *stipes* slender, but rigid, stramineous, blackish at the base, 1½ mm. thick, 10-15-18 cm. long, clothed near the base with ovate-lanceolate dark brown entire subulate scales 2/3 cm. long, the parts near the base of frond clothed with black setae, the matured plant almost glabrous; *frond* simple, hastato-triangular, base deeply cordate with narrow or close sinus, broadly auriculate, on each side, shortly acuminate or acute at the apex, 8 cm. long and broad, margin perfectly entire; *texture* rigid, coriaceous, color light green above, paler and opaque below; *veins* conspicuous, close, flabellato-pinnate, very oblique, anastomosing into elongate large areolae with 1-2 excurrent included soriferous veinlets; *sori* numerous, brown, sparsely and irregularly disposed all over the under surface, 1½ mm. broad, subrounded, inducium peltate, larger than sorus, turgid, gray, with denticulate margin and raised black centre, persistent or falling off at last.

Distribution: Kweichow.

This interesting fern differs from all known species in the genus by its simple entire, broadly hastato-cordate leaves, resembling our *Phyllitis cardiophylla* (Hance) Ching in outline. It was first discovered in Pin-fa, Kweichow, by Père J. Cavalerie in 1908 and later in 1911 by Père J. Esquirol in the same locality. The addition of this species to the genus *Cyrtomium* has practically completed the uninterrupted line of development of all the types represented in the genus from the very simple form to pinnate and more ample bipinnate forms.

Plate 14. Fig. 1. Habit sketch, natural size. 2. A portion of the frond, showing venation and sori, natural size. 3. The same (x 3). 4. Inducium (x 104). 5. Two sporangia (x 160). 6. Scales from rhizome and base of stipe (x 5).

第十四圖

單葉貫衆（水龍骨科）

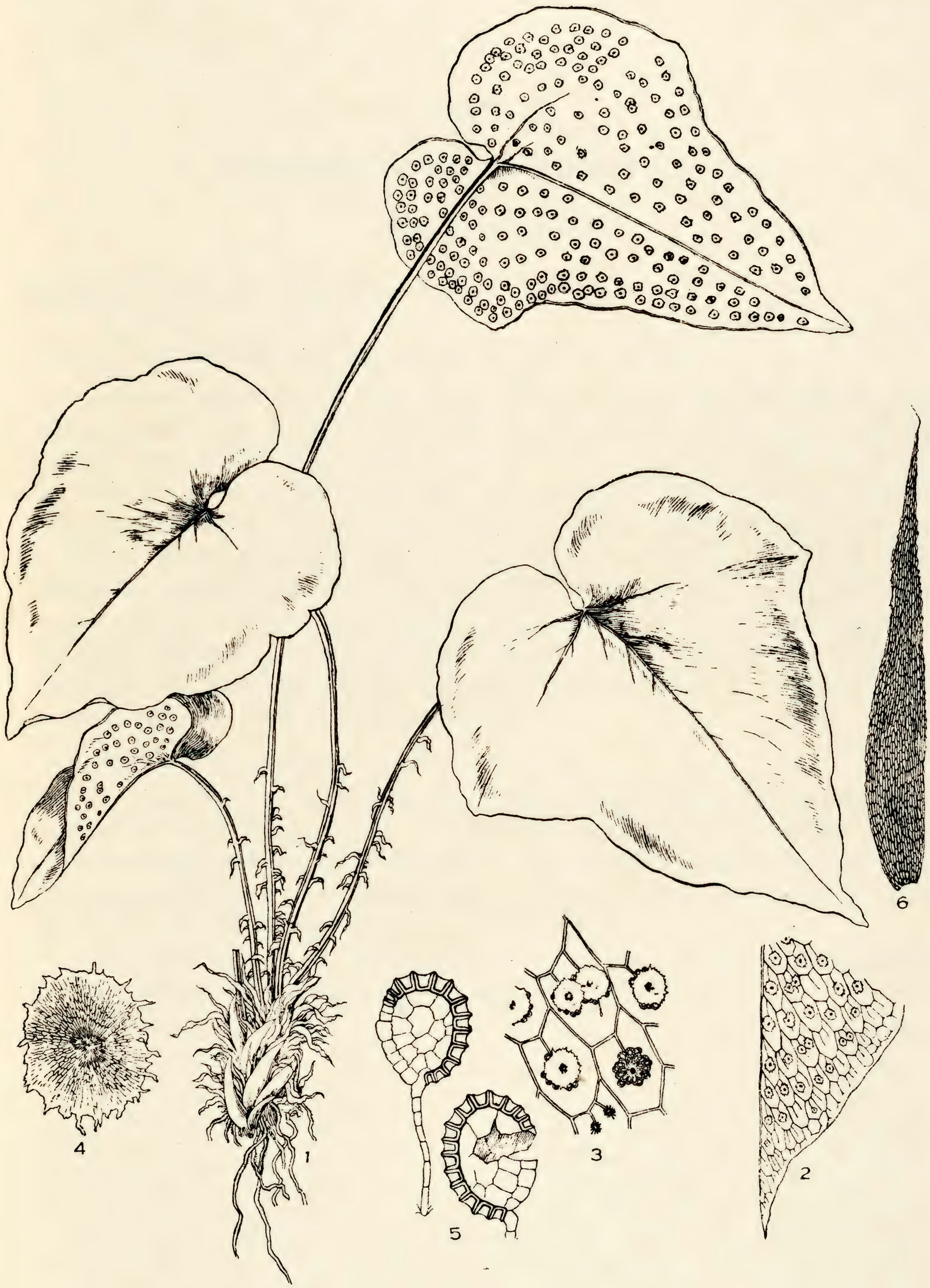
CYTOMIUM HEMIONITIS Christ

地下莖斜生或直立，粗如人指，黑色，被有葉柄之殘餘；葉三至六個簇生；葉柄細硬，稻稈色，基部微黑，長十至十五或十八粉，基部被有卵圓披針形暗褐色全緣尖銳之鱗片，鱗片長三分之二粉；其在葉體基部下之部分被有黑色刺毛，成熟之植物則幾無毛；葉體單簡，戟狀三角形，基部深心臟形，具有淺或緊貼之凹處，兩側有寬耳，頂部短漸尖頭，長闊各八分，全緣；葉體硬革質，上面淡綠色，下面尤淡，不透明；葉脈顯明，密生，扇狀羽狀，甚傾斜，聯絡成大形長網孔，包有一二伸出至孢子囊群之支脈；孢子囊群甚多，褐色，不規則疎散於小葉下面全部，闊一粉半，幾圓形；子囊羣蓋盾狀，較子囊群爲大，硬，灰色，邊緣有小齒，中部突起黑色，永存或久而脫落。

分布：貴州。

此種特殊之蕨與此屬中各種皆異者在其簡單全緣闊戟狀心臟形之葉，外形與 Phyllitis cardiophylla (Hance) Ching 相似，最初爲 Père J. Cavalerie 於 1908 年在貴州採得，後經 Père I. Esquirol 在原地採得，此種之採得可將此屬發達由單葉至一次羽狀複葉終至二次羽狀複葉之程序完全表明。

圖註：1. 植物全形（自然大） 2. 葉體之一部示葉脈與孢子囊群（自然大） 3. 全上（放大三倍） 4. 子囊羣蓋（放大百〇四倍） 5. 二孢子囊（放大百六十倍） 6. 地下莖與葉柄基部上之鱗片（放大五倍）。



CYRTOMIUM HEMIONITIS Christ

單　葉　貫　衆

PLATE 15.

CYRTOMIUM NEPHROLEPIOIDES (Christ) Ching.

POLYPODIACEAE

CYRTOMIUM NEPHROLEPIOIDES (Christ) Ching, comb. nov.

Polystichum nephrolepioides Christ in Bull. Geogr. Bot. Mans (1902) 258, c. fig; C. Chr. Ind. Ind. 582 (1906); Matthew in Journ. Linn. Soc. 39: 387 (1911).

Rhizome short, strong; *stipes* mostly fasciculate, 3-9 cm. long, curved or erect, densely clothed with reddish-brown, ovate diaphanous scales 3 mm. long, subglabrous upward, terete below, sulcate above; *frond* nutant, linear-lanceolate, 5-28 cm. long, 3-4 cm. broad, simply pinnate under the terminal pinna; pinnae 4-25 on each side, imbricately conferted, the lower ones scarcely reduced, deflexed, subequal, ovate, strongly cordate at the base, very obtuse or rounded at the apex, shortly petiolate, entire, opaque, brownish-green, thick coriaceous, glabrous smooth above, corrugated beneath, margin narrowly reflexed; *viens* hidden, close, anastomosing in a row of large oblique hexagonal areolae each with 1 included soriferous veinlet, free towards margin with thickened apex; *sori* uniseriate or 2 at the base, 5-6 on each side, medial, 1½ mm. broad rounded, inducium small, peltate, deciduous.

Distribution: Kweichow.

A rare little fern endemic in the province of Kweichow, and its discovery is indebted to Père J. Esquirol, 1898. It differs from all its relatives by nodding character of its frond with rather small ovate-cordate entire pinnae of a thick coriaceous texture. Its anastomosed veins unmistakably indicate its proper genus; and a correction regarding venation in Christ's diagnosis must be made.—R. C. C.

Plate 15. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori (x 3). 3. A detached sorus with inducium (x 52). 4. Scales from stipe (x 8).

第十五圖

低頭貫衆（水龍骨科）

CYRTOMIUM NEPHROLEPIOIDES (Christ) Ching

地下莖短而壯；葉柄通常簇生，長三至九粉，彎生或直立，密被赤褐色卵圓形透明長三糎之鱗片上部幾光滑，下面圓筒形，上面有槽；葉體微俯，線披針形，長五至二十八粉，闊三至四粉，一次羽狀，小葉在每側四至二十五枚，掩覆密集，下部者略小，向下彎，幾相稱，卵圓形，基部顯著心臟形，頂端甚鈍頭或圓形，有短柄，全緣，不透明，褐綠色，厚革質，光滑，上面平滑，下面皺摺，邊緣微卷，葉脉不顯明，密集，聯絡成一行大形傾斜六角之網孔各有一內伸至子囊羣之支脉，在邊緣處游離具有加厚之頂端；孢子囊羣成一列或在基部成二列，每側五六個，生於中部，闊一·五糎，圓形，子囊群蓋小形，盾狀，易脫落。

分布： 貴州。

一希有之種獨生於貴州，爲 Père J. Esquirol 在 1898 年所發見，其與他種異者爲其葉體微俯之性質與其厚革質小卵圓心臟形全緣之小葉。

圖註： 1. 植物全形（自然大） 2. 小葉表示葉脉與孢子囊羣（放大三倍） 3. 脫落之子囊羣與子囊羣蓋（放大五十二倍） 4. 葉柄上之鱗片（放大八倍）。

CYRTOMIUM NEPHROLEPIOIDES (Christ) Ching

低　頭　貫　衆

PLATE 16.

CYRTOMIUM LONCHITOIDES Christ.

CYRTOMIUM LONCHITOIDES Christ in Bull. Geogr. Bot. Mans (1902) 264; C. Chr. Ind. Suppl. 101 (1906-13).

Polystichum lonchitoides Diels in Nat. Pfl. Fam. I. 4. 195; C. Chr. Ind. 585 (1906).

Aspidium lonchitoides Christ in Bull. Boiss. 7: 16 (1899).

Rhizome short, erect, covered with large dark brown lanceolate, membranaceous scales and so is the stipe, scales about 1 cm. long, 3 mm. broad, with entire or scarious margin; *stipes* 5-10 cm. long, dark stramineous; *frond* 20-30 cm. long, 4-5 or 6 cm. broad, elongate lanceolate, narrowed downward, pinnate under the deeply pinnatifid short apex; rachis covered with stiff spreading linear-subulate light brown scales; pinnae 16-20 on each side, shortly petiolate or subsessils, remote, subopposite or alternate, unequal, patent, the lower ones much reduced, triangular-auriculate with a shard deflexed apex on the upper side, the lower side cut away to the costa, to 3 cm. long, 1.2 cm. broad, entire or more or less sinuate-crenulate; *texture* thin herbaceous; *vein* very oblique, dense, copiously anastomosing usually with one rarely 2 excurrent included soriferous veinlets in each areola; *sori* very small, numerous, in 3 rows on each side of the costa, inducium very thin, peltate or reniform.

Distribution: Szechuan, Hupeh, Kweichow, Yunnan.

This species was first discovered by Père Bodinier in Kweichow. It is most closely related to *Cyrtomium fortunei* J. Sm. var. *polypterum* Diels, differs in elongate lanceolate frond of almost membranaceons texture and numerous smaller undulate-crenate pinnae.

Plate 16. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori (x 2), 3. A Scales from stipe (x 5). 4. Scales rachis (x 5). 5. A detached sorus with inducium (x 46).

第十六圖

擬貫衆（水龍骨科）

CYRTOMIUM LONCHITIOIDES Christ

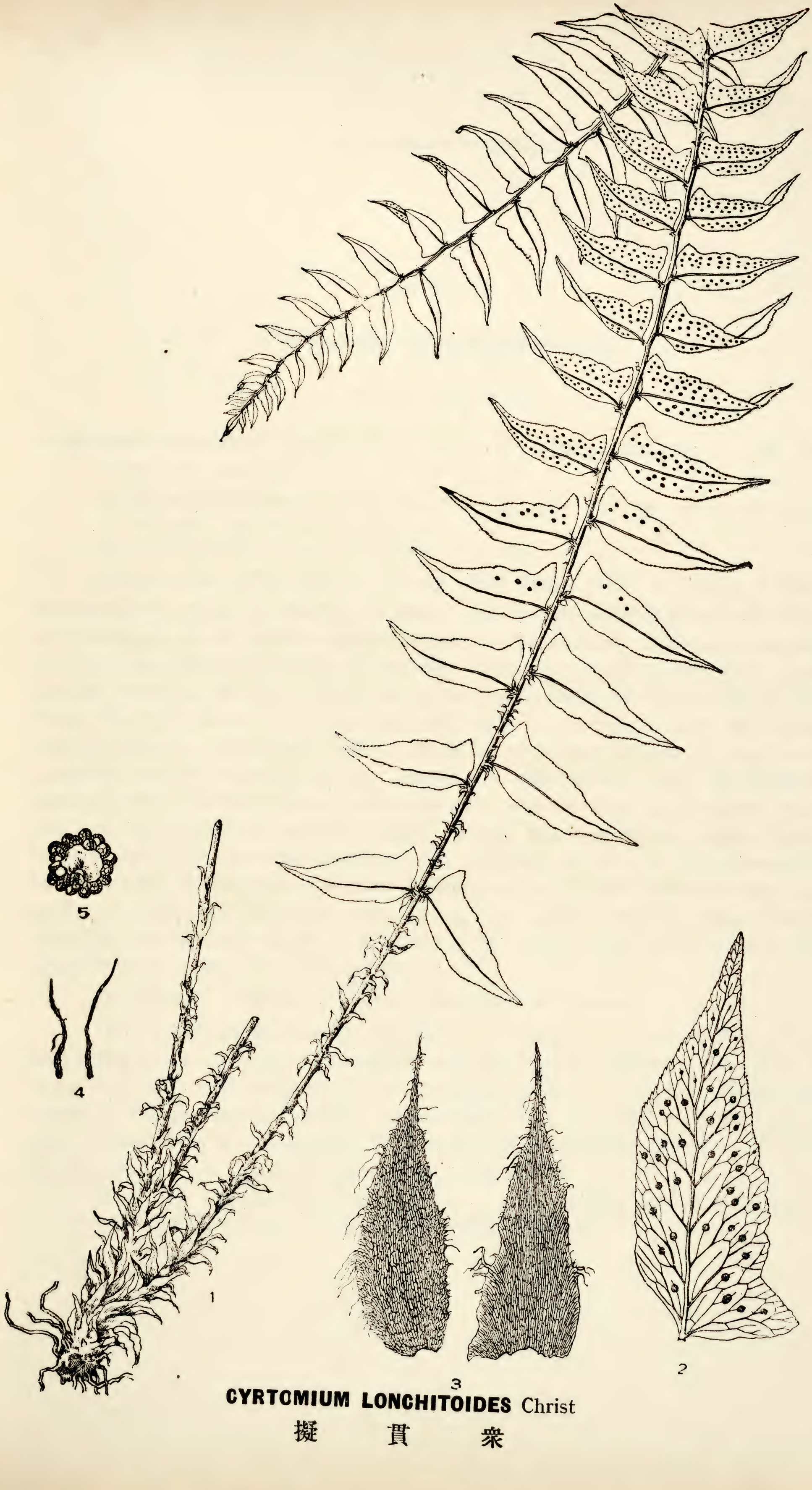
地下莖短而直立，與葉柄同被有大形暗褐色披針形膜質之鱗片，鱗片長約一粉，闊約三糎，邊緣完全成薄膜狀，葉柄長五至十粉，暗稻稈色；葉體長二十至三十粉，闊四或五至十粉，長披針形，下部較窄，一次羽狀，頂端小葉短，深羽狀分裂，葉軸被有堅硬開張尖披針形淡褐色之鱗片；小葉每側十六至二十個，具短柄或幾無柄，相距甚遠，幾對生或互生，不等稱，開張，下部者頗縮小，上部者具一有驟彎之頂之三角形耳，下部削去至中肋，長至三粉，闊一·二粉，全緣或圓波齒狀；葉體薄草質；葉脈甚傾斜，密集，聯絡極複雜，每網孔中有一或二內伸至子囊群之小脈；孢子囊群小，多數，中肋每側各三列，子囊群蓋薄，盾狀或腎狀。

分布： 四川，湖北，貴州，雲南。

此種最初爲 Père Bodinier 在貴州發見，與 Cytomium falcatum Presl var. polypterum (Diels) 相近，與之異者在長披針形幾膜質之葉體與多數較小波齒狀之小葉。

圖註： 1. 植物全形(自然大) 2. 一小葉表示葉脈與子囊群（放大二倍） 3. 葉柄上之鱗片（放大五倍） 4. 葉軸上之鱗片（放大五倍） 5. 子囊群與子囊群蓋（放大四十六倍）。

Plate 16
第十六圖



CYRTOMIUM LONCHITOIDES Christ
擬　貫　衆

PLATE 17.

CYRTOMIUM FRAXINELLUM Christ.

POLYPODIACEAE

CYRTOMIUM FRAXINELLUM Christ in Bull. Geogr. Bot. Mans (1902) 264; C. Chr. Ind. Suppl. 101 (1906-13).

Polystichum fraxinellum Diels in Nat. Pfl. Fam. I. 4. 494; C. Chr. Ind. 582 (1906); Matthew in Journ. Linn. Soc. 39: 386 (1911).

Aspidium fraxinellum Christ in Bull. Boiss. 7: 15 (1899).

Rhizome short, thick, oblique, strong, scales dense, broad, acuminate, inflated, reddish-brown; *stipes* 2-6 clustered, 10-25 cm. long, dark brown at the base and covered with numerous small subulate-lanceolate dark brown deciduous scales, growing pale gray and sparse upward; *frond* simply pinnate, oval-oblong, to 20 cm. long, 8 cm. broad, scarcely reduced at the base, terminated at the apex sometimes by an entire of sometimes pinnatifid pinna; rachis gray, sparsely scaly or glabrous; pinnae few, usually 5-10 on each side, erect-patent, remote, alternate, lanceolate, acuminate, cuneate and attenuate towards the base on short petiole, the edge almost entire but distinctly crenate towards the apex; *texture* thick coriaceous, smooth, dark glossy green abover very pale and somewhat corrugated (upon drying) below, glabrous, margin slightly reflexed; *veins* not prominent, numerous, close, anastomosing in a row of narrow areolae almost reaching the margin without included free veinlets or often imperfectly pinnate or rather 2-3-bifurcate in each group; *sori* 2-3 mm. across, rounded, blackishbrown, uniseriate, terminating a short lateral veinlet in the areola, about 18-30 on each side, placed midway between the costa and margin.

Distribution: Yunnan, Kweichow, Szechuan, and Kwangsi.

This distinct species was first collected by A. Henry in Yunnan, on wooded clif, later (1889) by Père Bodinier in Kweichow, and still later by Wilson in Szechuan. It was of very late (1928) collected in N. W. Kwangsi, where it is a fairly common fern, inhabiting the crevices and nitches in limestone cliff. In habit this fern is closely allied to some from of *C. fortunei* J. Sm., differs in blackish-brown uniseriate sori, thick leathery glossy green leaves and cuneate base of the pinnae.

Plate 17. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori (x 2). 3. A detatched inducium (x 52). 4. Scales from the base of stipe (x 8).

第十七圖

槐葉貫衆（水龍骨科）

CYRTOMIUM FRAXINELLUM Christ

地下莖短而粗壯，斜生，鱗片密生，闊形，漸尖頭，膨大，赤褐色，葉柄成二至五簇，長十至二十五糎基部暗褐色 被有多數小形尖披針形暗褐色脫落之鱗片，上部則鱗片漸少而作淡灰色，葉體一次羽狀，長卵圓形，長至二十糎，闊八糎，基部略縮小，頂部有一全緣或羽狀分裂之小葉；葉軸灰色，微被鱗片或光滑；小葉少，每側通常五與十個，直立開張，相距甚遠，互生，披針形，漸尖頭，基部楔形，縮小成短葉柄，幾全緣，近頂處則具波齒；葉體厚革質，光滑，上面暗光綠色，下面色甚淡而微皺摺，光滑，邊緣微卷；葉脈不顯明，多而密，聯絡成一行狹長網孔幾達於葉緣，無內伸游離之支脈，或不完全羽狀，或一羣中二三次分叉，孢子囊羣直徑二至三糎，圓形，黑褐色，成一列，生於網孔中之短脈上，每側有十八至三十個，生於中肋與邊緣之間。

分布： 雲南，貴州，四川，廣西。

此特殊種先爲 A. Henry 在雲南發見，後在 1889 年 Père Bodinier 在貴州發見，最後 Wilson 在四川發見，在 1928 年作者在廣西西北部發見，在該地此種甚爲普通，生於石灰巖之裂縫中，此類蕨之外形頗似 C. falcatum Presl，其異點在黑褐色之一列孢子囊羣，厚革質光綠色之葉與小葉楔形之基部，一仁昌。

圖註： 1. 植物全形(自然大) 2. 一次小葉表示葉脈與孢子囊群(放大二倍) 3. 脫離之子囊群蓋(放大五十二倍) 4. 葉柄基部之鱗片 (放大八倍)。

Plate 17
第十七圖

CYRTOMIUM FRAXINELLUM Christ

槐　葉　貫　衆

PLATE 18.

MICROLEPIA CHRYSOCARPA Ching

POLYPODIACEAE

MICROLEPIA CHRYSOCARPA Ching in Sinensia 1:3 (1929).

Rhizome wide-creeping, 3-4 mm. thick, densely hirsute, sparsely rooted; *stipes* uniseriate, scattered, 1.5-2 cm. apart, strong, rigid, densely shaggy hirsute near the base, sparsely hirtellous upward, light lustrous, castaneous, sulcate, 32-40 cm long, as thick as or slightly thicker near the base than the rhizome; *frond* broadly oblong-lanceolate, not abbreviate towards base, 35-42 cm. long, 10-12 cm. broad, gradually acuminate towards apex, tripinnatifid or almost tripinnate towards the base of the lower pinnae; pinnae shortly petiolate, (petiole 3-4 mm. long), 14-17 on each side below a deeply pinnatifid acuminate apex, the lower ones much remoter than the upper (5-6 cm. apart), erect-patent, confertad above the middle, the lower ones 10-12 cm. long, 4-4.5 cm broad, oblong-lanceolate, slightly narrowed toward base, pinnate; pinnules 14-17 on each side below a short deeply pinnatifid acuminate apex, conferted, shortly petiolulate, oblong-lanceolate, strongly unequal at base, 2-2 5 cm. long, 7-10 cm broad pinnatifid almost down to the costa into oblong, rounded, more or less crenate lobes; lobes pectinate, the basal ones on the anterior side much the largest with straight inner margin parallel to the rachis of pinnae, 5-7 mm. long, 3-4 mm. broad, about 7 on each side under the acute serrate apex; *veins* in the ultimate lobes distinct, free, pinnate, 4-5-jugate, each again once-forked; *sori* dark brown, dense, submarginal, ferminating the veinlets in the ultimate lobes, 5-6 on the basal lobes, fewer on the upper ones, unisorous on the uppermost lobes. indusium brown, persistent, almost rounded; *texture* thick. coriaceous, light green, sparsely hairy along costa above, densely hirtellous on the rachis, and upper side of the costa of the pinnae, much less so beneath.

Distribution: Kwangsi.

Plate 18. Fig. 1. Habit sketch, (natural size). 2. A pinnule from the basal part of pinna (x 2). 3. A segment from the basal part of the pinnule, showing venation and sori (x 6). 4. Hair from rhizome(x 48).

第十八圖

黃胞鱗蕨（水龍骨科）

MICROLEPIA CHRYSOCARPA Ching.

地下莖匍匐甚廣，粗三至四糎，密被硬毛，生根甚少；葉柄成一列，散生，相距一·五至二粉，壯而硬基部密被不整齊硬毛，向上則毛稀薄，有光澤，栗褐色，有槽，長三十二至四十粉，粗與地下莖等或近基部者較粗；葉體闊長圓披針形，近基部處不短縮，長三十五至四十二粉，闊十至十二粉，頂部漸尖頭，三次羽狀分裂或至下部小葉基部處成三次羽狀：一次小葉具短柄，（葉柄長三四糎）每側十四至十七個，頂上具一深羽狀分裂漸尖頭之頂葉，下部小葉相距較上部者爲遠（相距五至六粉）直立開張，在中部密集下部小葉長十至十二粉，闊四至四·五粉，長圓披針形，近基部微窄，羽狀；二次小葉在一短深羽狀分裂漸尖頭之頂下每側十四至十七個，密集，具短柄，長圓披針形，基部甚不等稱，長二至二·五粉，闊七至十粉羽狀分裂幾至中肋，裂片長圓，具圓頂，略具波齒狀，裂片櫛狀分裂，在前面生基部者最大，其內面邊緣直，與小葉葉軸平行，長五至七糎，闊三至四糎，在銳尖頭踞齒狀之頂下每側有七個，最小裂片上之葉脈顯明，游離，羽狀，成四五對，每葉脈再分叉一次；孢子囊群暗褐色，密生於最小裂葉近葉緣處支脈之頂上，在基部裂片上有五六個，在上部裂片上較少，在頂上裂片上一個；子囊群蓋褐色，永存，幾圓形；葉體厚革質，淡綠色，上面循中肋微有毛，在葉軸與小葉上面中肋上則密被硬毛，在下面則殊稀。

分布： 廣西。

圖註： 1. 植物全形（自然大） 2. 小葉基部之二次小葉（放大二倍） 3. 二次小葉基部之裂片表示葉脈與子囊羣（放大六倍） 4. 地下莖上之毛（放大四十八倍）。

MICROLEPIA CHRYSOCARPA Ching

黃胞鱗蕨

PLATE 19.

LINDSAYA CHIENII Ching

POLYPODIACEAE

LINDSAYA CHIENII Ching in Sinensia 1:4 (1929)

Rhizome moderately wide-creeping, oblique-ascending, 1.5-2 mm. thick, thinly covered by small adpressed subulate ferruginous scales; *stipes* subcaespitose, slender, 15-26 cm. long, grooved above, polished, dark chestnut brown, and so is the rachis, rarely sparsely scaly near the base, otherwise glabrous in all parts; *fronds* oblong-deltoid, 11-14 cm. long, about 7 cm. broad at base, bipinnate, with a short simple pinnate apex; the basal pinnae much the largest, 5 cm. long, 2 cm. broad, pinnate, the upper ones gradually shortend and less compound, subsessile, alternate, erect-patent, the lower 4-6 pairs pinnate, oblong-lanceolate, with an acuminate pinnatifid apex, secondary rachis castaneous beneath; the pinnules subsessile, oblique rhomboid with basal ones often suborbicular, cuneate, cut on the outer and upper margin into few broad short truncate soriferous lobes, entire and straight on the lower and inner sides, 1-1.2 cm. long, 5 mm. broad, alternate, 5-6 pairs in the basal pinnae; the terminal pinnae are of same shape and size; *texture* thin herbaceous, light green above, paler below, rather pellucid, midrib distinct only in larger pinnules; *veins* all free, flabellate, transluscent, 1-2 forked; *sori* 5-7 on each pinnule, short, not confluent, submarginal, transversely linear-oblong, mostly uniting the apices of two veins, but not uncommon apical on single veins; indusium membranaceous, narrow, grayish.

Distribution: Kwangsi.

Plate 19. Fig. 1. Habit sketch, (natural size). 2. A pinnule, showing venation and sori (x 4). 3. Scales from rhizome (x 16).

第 十 九 圖

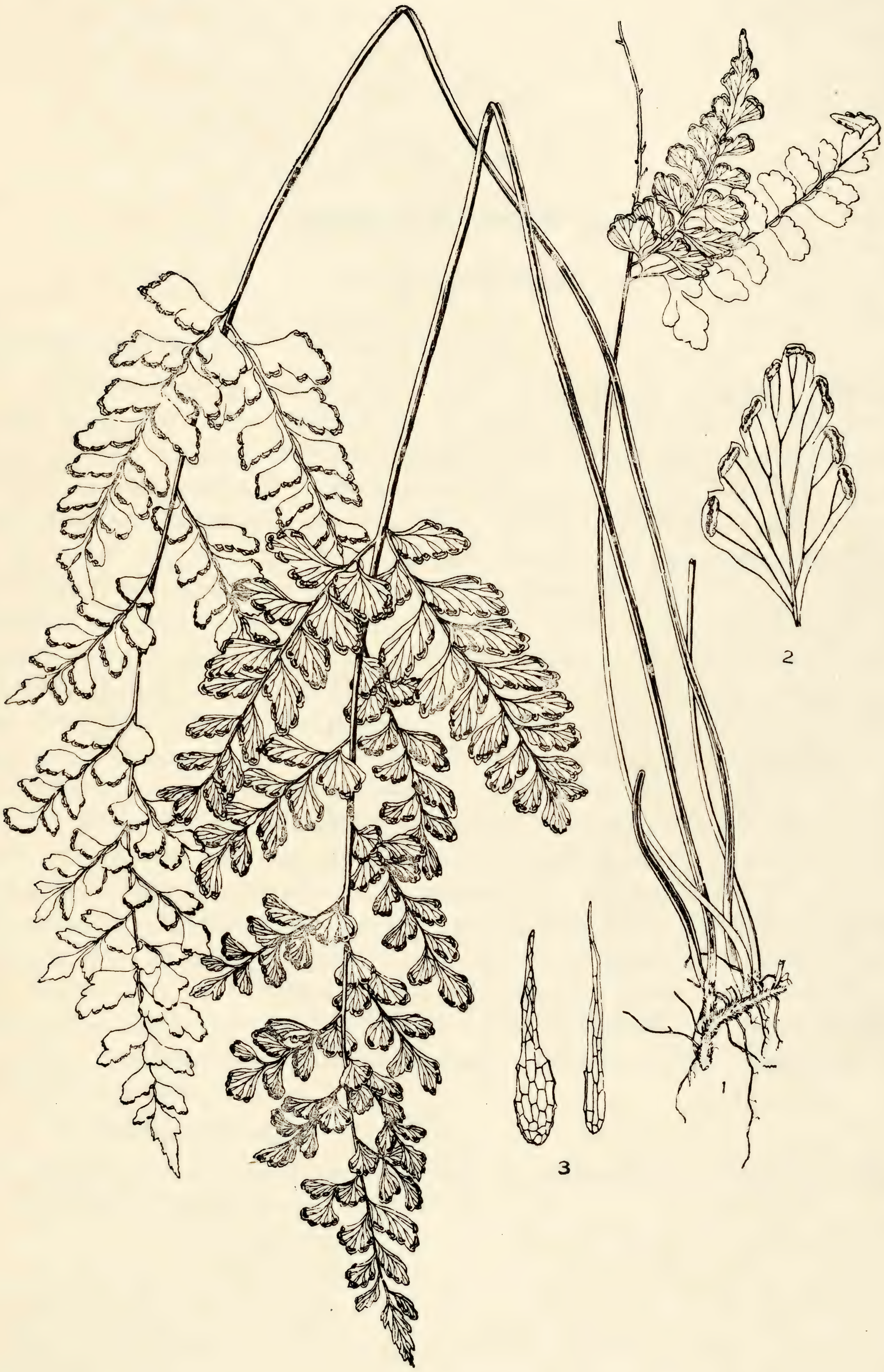
錢氏假鐵線蕨（水龍骨科）

LINDSAYA CHENII Ching.

地下莖匍匐頗廣，斜向上伸，粗約一·五至二粍，薄被有小形緊貼針狀鏽色鱗片；葉柄幾叢生，細瘦，長十五至二十五粉，上面有槽，平滑，暗褐色，葉軸亦如之，稀基部微被鱗片，此外全部皆光滑；葉體長圓三角形，長十一至十四粉，基部闊約七粉，二次羽狀，頂端有一羽狀之頂；基部一次小葉最大，長五粉，闊二粉，羽狀，上部者漸小漸簡單，幾無柄，互生，直立開張，下部四至六對，羽狀長圓披針形，有一漸尖頭羽狀分裂之頂，二次葉軸下面栗色；二次小葉幾無柄，斜菱形，基部者常作幾圓形，楔形，外面上部分裂爲數短闊截形生孢子囊群之裂片，下部與內面全緣，長一至一·二粉，闊五粍，互生，在基部一次小葉上有五六對；頂端一次小葉之形狀大小與側生者相若；葉體薄草質，上面淡綠色，下面較淡，殊透朋，中脉惟在較大之次小葉上顯明；葉脉完全游離，扇狀，半透明，一至二次分叉；孢子囊群在每二次小葉五至七個，短不相連，生近邊緣處，橫線長圓形，通常連接二葉脉之頂部，有時亦生於單脉之頂部；子囊蓋膜質，窄，灰色。

分布： 廣西。

圖註： 1. 植物全形（自然大） 2. 二次小葉表示葉脉與孢子囊（放大四倍） 3. 地下莖上之鱗片（放大十六倍）。



LINDSAYA CHIENII Ching
錢氏假鐵線蕨

PLATE 20.

LINDSAYA CHINENSIS Ching

POLYPODIACEAE

LINDSAYA CHINENSIS Ching in Sinensia 1:5 (1929).

Rhizome creeping, about 3 mm. thick, scales dense, spreading, dark shining brown, linear with rather a blunt apex, 1-1. 5 mm. long; *stipes* approximate, 4-10 mm. apart, slender, glabrous throughout, dark shining chestnut brown and become lighter upward, to 9 cm. long, and 1 mm. thick at base; *fronds* deltoid-lanceolate, 10-16 cm. long, about 5.5 cm. broad at base, 1.2-1.8 cm. broad in the middle, glabrous, bipinnate in the lower one-third, the remaining upper two-thirds simply pinnate, or sometimes the whole frond simply pinnate, gradually diminishing towards apex; pinnae spreading, petiolate, alternate, the lower 3-6 pairs oblong-lanceolate, 2-3 cm. long, 6-10 mm. broad, pinnate under a pinnatifid rather blunt apex; pinnules 5-8 pairs, almost equilateral triangular, petiolulate, cuneate at base, and cut on the rounded outer margin about $\frac{1}{3}$ way down into 2-4 short broad more or less dilated segments with a blunt or more or less erosed truncate appex, the upper ones often subentire, to 4 mm. long, about as broad; the upper pinnae numerous (about 22-30 pairs), reniform to flabellato-cuneate, to 1 cm. long and as broad, variously cut along the rounded outer edge into 4-6 oblong more or less dilated segments which are often again bifid and of the same shape as, but larger than, those in the pinnules of lower pinnae; rachis slender, terete, more or less channelled above, light green, except the lower part which is dark stramineous-brown, glabrous; *veins* slender, free, rather distinct, flabellate, mostly once-forked or simple, 1-2 (never 3) to each ultimate segment; *texture* pellucido-herbaceous, thin, but rigid; *sori* orbicular to transverse-oblong, one to each segment, terminating 1-2 veinlets, indusium membranaceous, pale green, margin subentire or bifid, falling quite a way short of the margin.

Distribution: Kwangsi.

Plate 20. Fig. 1. Habit sketch (natural size). 2. A pinna from the upper part of frond (x 3). 3. Scales from rhizome (x 24).

第 二 十 圖

華假鐵線蕨（水龍骨科）

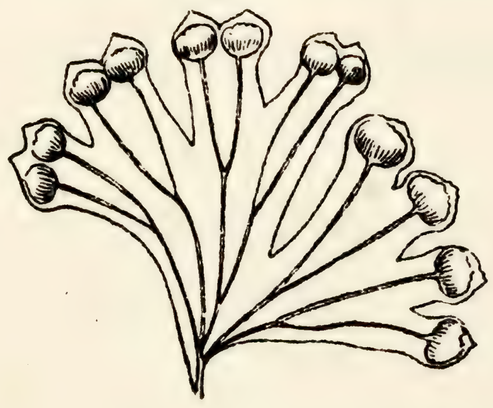
LINDSAYA CHINENSIS Ching.

地下莖匍匐，粗約三糎，鱗片密生，開張，暗褐色，有光澤，線形，鈍尖頭，長一至一·五糎；葉柄相距四至十糎，細瘦，完全光滑，暗栗色，有光澤，漸上色漸淡，長至九粉，基部粗一糎，葉體三角披針形，長十至十六粉，基部闊五十五糎，中部闊十二至十八糎，光滑，下部三分一二次羽狀，上部三分二一次羽狀，有時全體一次羽狀，向頂部逐漸減小；一次小葉開張，有柄，互生，下部三至六對長圓披針形，長二至三糎，闊六至十粉，羽狀，上有一羽狀分裂鈍尖頭之頂；二次小葉五至八對，幾等稱三角形，有葉柄，基部楔形，自外緣深裂至三分一成爲二至四個短闊裂片，裂片有鈍而有缺刻截形之頂端，上部者常全緣，長四糎，闊如之；上部一次小葉有二十二至三十對，腎狀形，至扇狀楔形，長一糎，闊如之，循圓形外緣分裂爲四至六個長圓形之裂片，裂片有時再二裂，與下部一次小葉之二次小葉同形而較大；葉軸細瘦，圓筒形，上面微有槽，淡綠色，下部則暗稻稈褐色，光滑；葉脈細，遊離，頗明顯，扇狀，通常一次分叉或簡單，每裂片有一至二條；葉體透明草質，薄而硬；孢子囊群圓形或橫長圓形，每裂片一個，生一二葉脈之頂上；子囊蓋膜質，淡綠色，幾全緣或二裂，距裂片邊緣頗遠。

分布： 廣西。

圖註： 1. 植物全形（自然大） 2. 葉體上部之一小葉（放大三倍） 3. 地下莖上之鱗片（放大二十四倍）。

1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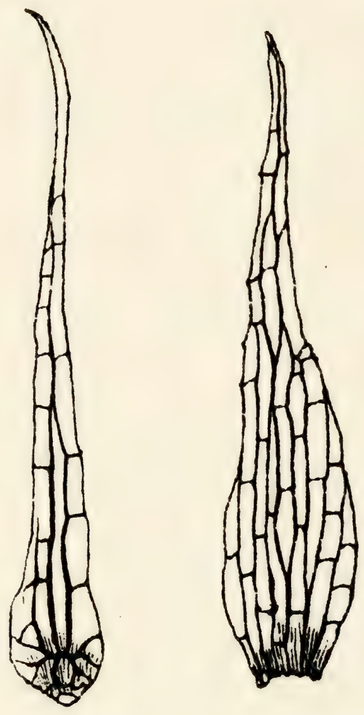

3

LINDSAYA CHINENSIS Ching

華　假　鐵　線　蕨

PLATE 21.

ATHYRIUM ANISOPTERUM Christ.

POLYPODIACEAE

ATHYRIUM ANISOPTERUM Christ in Bull. Boiss. 6:962 (1898), Bull. Geogr. Bot. Mans (1907) 133; C. Chr. Ind. 139 (1906); Matthew in Jour. Linn. Soc. 39: 348 (1911).

Athyrium fauriei Mak. var. *elatius* Christ in Bull. Boiss 6:193 (1898).

Rhizome thick, short, oblique; *stipes* slender, fasciculate, but few (3-4) together, base incrassate, dark brown or blackish, clothed with moderately dense brown scales, stramineous upward, 25 cm. long, glabrous in other parts; *frond* to 28 cm. long, to 8 cm. broad, somewhat broader towards the base, gradually attenuate towards the apex, oblong-lanceolate, bipinnatifid or sparsely bipinnate near the base; pinnae about 17 on each side, alternate, petiolate, the lower ones horizontally patent, remote, the lowest much the largest, oblong-deltoid, strongly unequal, truncate or cuneate on the under side at the base, auricled on the upper side, apex rather acute or shortly acuminate, the largest to 5 cm. long, 2.5 cm. broad, pinnate near the base, deeply pinnatifid above; pinnules or lobes oblique, oblong-ovate, obtuse, about 7 on each side, the basal pair in the lower pinnae usually free, the superior one much the largest, thus making the pinnae appearing auricled, contiguous to or somewhat imbricate on the rachis, inciso-crenate or deeply pinnatifid, the other lobes adnate to the broad winged costa and only deeply incised towards the apex, the upper pinnae deeply inciso-lobed, lobes obtuse, obscurely crenate; *sori* numerous, large, 8, 7, 5 or 3 to each lobe, 1.5-2 mm. long, usually hippocrepiform or ovate, inducium persistent, gray, reniform; *texture* thin herbaceous, color obscurely green on both sides.

Distribution: Yunnan, Hupeh, and also Luzon of the Philippine Islands.

A medium-sized fern of an elegant habit, easily recognized by its rather unequal pinnae, which are prominently auricled above and truncate or cuneate below and by large gray horseshoe-shaped sori with persistent indusia. It was first collected by A. Henry in Man-mei, Yunnan, and later by Père Ducloux in the same province; and also recorded in Luzon, the Philippine Islands, by Tonglon and Copeland.

Plate 21. Fig. 1. Habit sketch (natural size). 2. A pinna from the basal part of frond (x 2). 3. A pinnule, showing venation and sori (x 5). 4. Scales from rhizome (x 30).

第二十一圖

宿蹄蓋蕨（水龍骨科）

ATHYRIUM ANISOPTERUM Christ

地下莖粗短斜生；葉柄細瘦，叢生，三四根集合，基部較粗，暗褐色或淡黑色，密被褐色鱗片，上部作稻稈色，長二十五粉，其他部分光滑；葉體長至二十八粉，闊至八粉，向基部較闊，向頂部逐漸尖窄，長圓披針形，二次羽狀分裂或近基部處微作二次羽狀；一次小葉每側約十七個，互生，有柄，下部者橫張，相距殊遠，最下者最大，長圓三角形，極不等稱，基部下面截形或楔形，上面有耳，頂部急尖頭或短漸尖頭，最大一次小葉長五粉，闊二·五粉，基部羽狀，上部深羽狀分裂，二次小葉或裂片斜長卵圓形，鈍頭，每側約七枚，下部一次小葉所有之基部一對通常分離，上部者較之殊大，使一次小葉呈耳狀，與葉軸相連，或掩覆其上，缺刻波齒狀或深羽狀分裂，其餘裂片附着於有闊翼之中肋上，惟至近頂處有缺刻，上部小葉深缺刻分裂，裂片鈍頭，微有波齒；孢子囊羣多數，大形，每裂片有八，七，五或三個，長一·五至二糎，通常馬蹄狀或卵圓形，子囊群蓋永存，灰色，腎狀形；葉體薄草質，二面皆暗綠色。

分布： 雲南，湖北；菲律濱之呂宋亦有之。

此種蕨頗美觀， 其易辨別處爲不等稱在基部上面截形或楔形之小葉， 與大形灰色馬蹄狀之子囊群與永存之子囊群蓋，此種先爲 A. Henry 在雲南採得，後經 Père Ducloux 在同省採得，Tonglon 與 Copeland 復在呂宋採得。

圖註： 1. 植物全形 （自然大） 2. 葉體基部之小葉 （放大二倍） 3. 二次小葉示葉脉與子囊群蓋 （放大五倍） 4. 地下莖之鱗片 （放大三十倍）。

ATHYRIUM ANISOPTERUM Christ

宿　蹄　蓋　蕨

PLATE 22.

ASPLENIUM FINLAYSONIANUM Wallich

POLYPODIACEAE

ASPLENIUM FINLAYSONIANUM Wall., HK. Ic. Pl. t. 937 (1854); HK. BK. Syn. Fil. 245; Christ Farnkraut. Erde. 199; Diels in Nat. Pfl. Fam. 1. 4, 239; C. Chr. Ind. III (1906); v. A. v. R. in Malay. Ferns 476 (1908).

Rhizome short, thick, obliquely ascending, densely clothed with rigid blackish lanceolate scales; *stipes* 15-23 cm. long, green, subcompressed, densely clothed near the base in the scales similar to those on the rhizome, the upper part and rachis subglabrous or clothed in blackish subulate-lanceolate scales; *fronds* 20-45 cm. long, 10-20 cm. broad, simply pinnate under an entire or subrepand or 3-lobed terminal pinna which is much the largest, lateral pinnae 1-6, subopposite or alternate, the lower ones somewhat larger than the ones next above, 7-12 cm. long, 2-4 cm. broad, the point very acuminate, the base equal or subequal, very gradually narrowed on both sides to a distinct petiole, the edge entire or subrepand; *texture* subcoriaceous or chartaceous; *veins* subflabellate, very oblique, slightly anastomosing towards the edge, sometimes bounded by an irregular intramarinal line; *sori* often 3.5-5 cm. long, scattered irregularly, near the costa, but falling short far off from the margin.

Distribution: India, Malaya, China: Yunnan.

Evidently rather a rare plant in China, recorded so far only from Yunnan by A. Henry.

Plate 22. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori (natural size). 3. Scale from rhizome (x 30).

第二十二圖

網脉單蓋蕨（水龍骨科）

ASPLENIUM FINLAYSONIANUM Wallich.

地下莖短，粗壯，斜向上伸，密覆以堅硬略黑披針形之鱗片，葉柄長十五至二十三粉，綠色，略扁，基部被以形似地下莖所有之鱗片，上部及葉軸微光滑或被以略黑色針狀披針形之鱗片，葉體長二十至四十五粉，寬十至二十粉，一次羽狀，頂部小葉甚大，全緣或稍有缺刻或成三裂片，兩側小葉一至六個，幾對生或互生，下部之小葉較在次上部者略大，長七至十二粉，寬二至四粉，尖端長漸尖頭，基部相等或幾相等，漸漸變窄而成葉柄，基部全緣或稍有缺刻；葉體幾革質或紙質；葉脉略成扇狀，甚斜，近葉緣處稍聯絡，有時連以不規則之緣內線；子囊群長三粉半至五粉，疎散少規則，生近中肋，延至離葉緣甚遠處而沒。

分布： 印度，馬來，在中國則雲南有之。

本種在國內稀見，僅 A. Henry 氏在雲南採得之。

圖註： 1. 植物全形（自然大） 2. 一次小葉示其脉及子囊羣（自然大） 3. 地下莖之鱗片（放大三十倍）。

ASPLENIUM FINLAYSONIANUM Wallich

網 脉 單 盖 蕨

PLATE 23.

DIPLAZIUM PULLINGERI (Baker) J. Smith

POLYPODIACEAE

DIPLAZIUM PULLINGERI (Baker) J. Sm. in Ferns Brit. and For. ed. II. 315 (1877); C. Chr. Ind. 238 (1906); Matthew in Jour. Linn. Soc. 39:358 (1911).

Asplenium pullingeri Baker in Gard. Chron. n.s. 4:484 (1875).

Asplenium bireme Wright in Kew Bull. (1908) 182.

Asplenium chlorophyllum Baker in Jour. Bot. (1885) 104; Bedd. in Handb. Suppl. 39 (1892).

Caudex rather thick, oblique; scales none or very small and obscure; *stipes* densely tufted (3-5 together), 12-17 cm. long, sordid blackish at the base, growing greenish upward, densely clothed like the entire main rachis with shaggy rather stiff, brown glandular hairs; *frond* 20-38 cm. long, 12-15 cm. broad at the middle, which is the broadest part, ovate-oblong, narrowed very gradually towards the apex and reduced towards the base, simply pinnate, rachis densely pilose; pinnae 20-25 on each side, alternate, moderately close, lanceolate, acuminate, crenate, the lower ones sessile, the middle ones adnate, the uppermost ones connected by a broad wing under the pinnatifid acuminate apex, those in the upper half of the frond horizontally patent, the basal ones strongly deflexed, the largest to 7 cm. long, 1.5 cm. broad, distinctly auricled on the upper side at the base, rounded or slightly cut away below; *veins* distinct to the margin, transluscent, forked once or twice, but pinnate in the auricles; *sori* linear, borne on the anterior veinlets and extending from the costa to more than half way to the margin, slightly curved, about 5 mm. long, rarely diplazioid, inducium moderately broad, persistent, not ciliate; *texture* thin papery, bright green, densely villose on both surfaces, and especially along the costae beneath.

Distribution: Kwangtung, Kwangsi, also Formosa and Penang.

A medium-sized and very distinct fern, characterized by all parts being densely villose and rarely diplazioid sori. Baker's diagnosis for his *Asplenium pullingeri* was evidently based upon a rather smaller plant then grown in Kew Gardens perhaps from the rootstocks sent to that institution by Mr. Pullinger from Hongkong, 1871. His statement, "its very short stipes" is certainly incorrect, as the specimens collected in Tai-mo-shan, Hongkong New Territory, where most likely be the type locality for Baker's species, by E. H. Wilson and W. T. Tutcher, upon which Wright based the description for his *Asplenium bireme*, has stipes to 30 cm. long, and Matthew's plant, No. 280 (February 4th. 1907), from Ma-on-shan in the same locality, upon which our present figure is based, has stipes from 12 to 17 cm. long.

Plate 23. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sori. 3. Scales from rachis (x 48).

第二十三圖

樸氏雙蓋蕨（水龍骨科）

DIPLAZIUM PULLINGERI (Baker) J. smith

根莖肥壯，斜生，無鱗片，或有極小不顯明之鱗片；葉柄密集，三五叢生，長十二至十七粉，基部暗黑色，向上作淺綠色，與主要葉軸俱被有粗糙堅硬之線狀毛，葉體長二十至三十八粉，中部闊十二至十五粉，卵長圓形，向頂部漸狹，向基部漸減縮，一次羽狀，葉軸密生毛；小葉每側二十至二十五個，互生，頗密接，披針形，漸尖頭，邊緣波齒狀，下部者無柄，中部者附生，最上者在羽狀分裂具漸尖頭之頂之下以闊翼相連，上半小葉橫張，中部者甚向下彎，最大者長七粉，闊一·五粉，上面基部有耳，下面圓形或微削去；莖脈至葉緣皆明晰，半透明·一次或二次分叉，但在耳上則成扇狀；孢子囊群綫形，生於前面之支脈上，由中肋延至距葉緣處一半以上，微彎，長約五糎，稀類似 Diplazium 所有者；子囊群蓋殊闊，永存，不生纖毛；葉體薄紙質，鮮綠色；兩面皆密生軟毛，尤以下面循中肋處爲甚。

分布： 廣東，廣西，臺灣，檳榔嶼亦有之。

此特殊蕨類最顯著之性質爲全部密生軟毛與偶類有似 Diplazium 之孢子囊羣，Baker 所以初稱之爲 Asplenium pullingeri 者因其記載完全本於一甚小之植物栽培於邱皇家植物園而或自 Pullinger 在 1871 年由香港寄去之地下莖產生者。樸氏所稱甚短之葉柄顯不眞確，蓋 Wilson 與 Tutcher 在香港所採者葉柄長至三十粉，而 Matthew 在同地所採之二八〇號之爲吾圖所根據者，其葉柄亦長二十至十七粉也。

圖註： 1. 植物全形(自然大) 2. 小葉表示葉脈與孢子囊羣， 3. 葉軸上之鱗片 (放大四十八倍)。

DIPLAZIUM PULLINGERI (Baker) J. Smith

波　氏　雙　蓋　蕨

PLATE 24.

DIPLAZIUM PELLUCIDUM Ching

POLYPODIACEAE

DIPLAZIUM PELLUCIDIUM Ching in Sinensia 1: 7 (1929).

Rhizome short, thick, obliquely erect; *stipes* densely tufted, clad rather sparsely in membranaceous brown subulate ciliate spreading scales, 20-23 cm. long, blackish on the lower half, dull stramineous upward, deeply channelled above; *fronds* oblong-ovate, 30-32 cm. long, 17-20 cm. broad in the middle, which is much the broadest, slightly abbreviate towards base, simply pinnate, rachis stramineous, scaly; pinnae 10-12 pairs under a broad pinnatifid acuminate apex, the middle ones 9-11 cm. long, 1.6-1.8 cm. broad near the base, lanceolate, subhorizontally patent, the basal ones shorter (8-9 cm.) and as broad, only slightly deflexed, alternate, rather approximate, the lower ones sessile, the upper ones broadly adnate, subtruncate, or rounded at base, dilated on both sides, apex acuminate, remotely and rather irregularly crenate below the middle, but distinctly and regularly serrate towards apex, *costa* slender, lateral veins transluscent, distinct, free, 4-5 mm. apart, 2-jugate, except the basal pair which is mostly 3-jugate, very ascending, extending to the margin; *texture* thin, pellucido-chartaceous, lustrous, light green above, paler below (when living); *sori* linear, 3-5 mm. long, slightly curved, oblique, following the anterior veinlet of the group, placed midway between costa and margin, very rarely diplazioid, indusium moderate broad, persistent.

Distribution: Kwangsi.

Plate 24. Fig. 1. Habit sketch (natural size). 2. A portion of pinna, showing venation and sori (x 7). 3. Scales from rhizome (x 24).

第二十四圖

膜葉雙蓋蕨

DIPLAZIUM PELLUCIDIUM Ching.

地下莖短而壯，斜向上伸；葉柄密集叢生，疎被以膜質褐色尖線形有纖毛開張之鱗片，長二十至二十三粉，下半部幾黑色，上部稻稈色，上面有深槽；葉體長圓卵形，長三十至三十二粉，中部十七至二十粉，近基部微縮小，一次羽狀，葉軸稻稈色，有鱗片；小葉在一闊羽狀分裂漸尖頭之頂下有十至十二對，中部者長九至十一粉，近基部闊一·六至一·八粉，披針形，橫張，基部者略短（八至九粉）而與之等闊微向下彎，互生，殊密集，下部者無柄，上部者附生，基部幾截形或圓形，在兩面俱擴張，頂部漸尖頭，中部以下疎生不整齊波狀齒，近頂部則顯明具整齊之鋸齒，中肋細瘦，側脈半透明，顯明，遊離，相距四至五糎，成二對，基部者則多成三對，直至葉緣；葉體質薄，透明紙質，上面淡綠色，有光澤，下面較淡，孢子囊線形，長三至五糎，微彎，斜列，延生於每群中最前面之支脈上，生於中肋與葉緣之間，甚稀類 Diplacium 屬所有者，子囊蓋頗闊，永存。

分布： 廣西。

圖註： 1. 植物全形(自然大) 2. 小葉之一部表示葉脈與孢子囊(放大七倍) 3. 地下莖上之鱗片(放大二十四倍)。

2

3

DIPLAZIUM PELLUCIDUM Ching

膜葉雙蓋蕨

PLATE 25.

DIPLAZIUM MACROPHYLLUM Ching

POLYPODIACEAE

DIPLAZIUM MACROPHYLLUM Ching in Sinensia 1: 6 (1929).

Rhizome thick, short, woody, erect, scales dense, imbricate, linear-lanceolate to linear-subulate, 1. 5-2 cm. long, with long hair-pointed frizzy apices, often 2-cleft, blackish, ciliate; *stipes* strong, 50-85 cm. long, about 1 cm. thick, dark brown, and paleaceous near the base, greenish upward, turning dark stramineous upon drying, broadly channelled above, scales similar to the rhizomatic ones, sparse on the basal part of the stipe, glabrous upward; *fronds* ample, 40-60 cm. long, 20-26 cm. broad, simply pinnate, broadly oblong, slightly abbreviate towards base, glabrous on both surfaces; *texture* herbaceous, moderately firm, glossy green above, paler below (when living); pinnae 7-9 on each side below a broad and shallowly pinnatifid acuminate apex, 2-3 cm. apart, oblong-lanceolate, petiolate (petiole 5 mm. long), the uppermost ones adnate, 17-19 cm. long, 3-4 cm. broad, base subtruncate to subrotund, apex acuminate, margin remotely lobato-crenate into broad rounded short lobes; *midrib* prominent, lateral veins spreading about 7 mm. apart, veinlets 5-6-jugate, free, very ascending; *sori* dense, confluent at last, oblong, 5-7 mm. long, following the lower 2-4 veinlets of the group, falling considerably short from the margin, indusium broad, spurious.

Distribution: Kwangsi.

Plate 25. Fig. 1. Habit sketch (natural size). 2. A portion of pinna, showing venation and sori (x 2). 3. Scale from the base of stipe (x 24).

第二十五圖

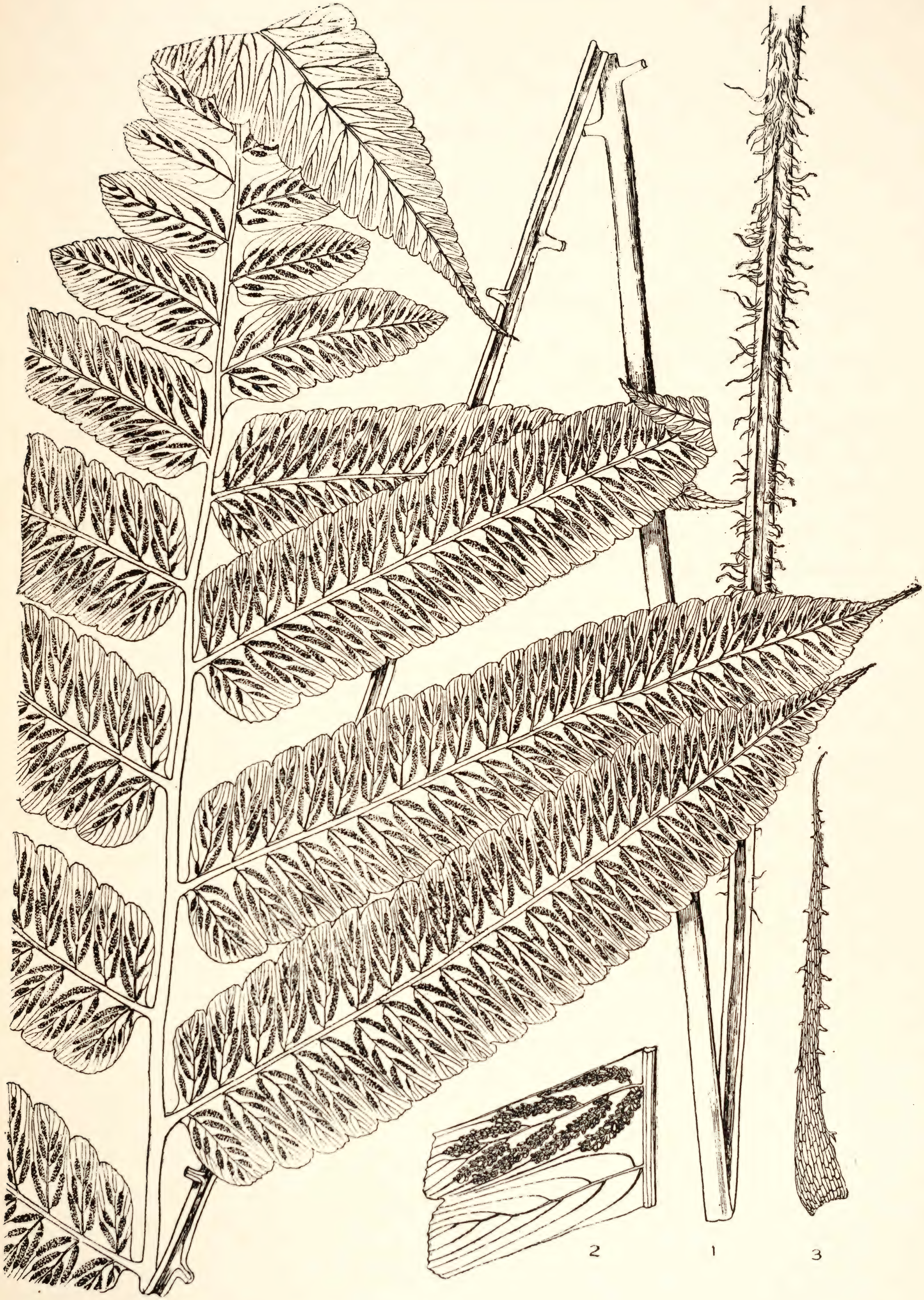
大葉雙蓋蕨（水龍骨科）

DIPLAZIUM MACROPHYLLUM Ching.

地下莖粗壯而短，木質，直立；鱗片密生，覆瓦狀排列，線披針形，至尖線形，長一·五至二粉，頂端尖長有毛，每二裂，幾黑色，有纖毛；葉柄強壯，長五十至八十粉，粗一粉，暗褐色，基部有粗糠狀鱗片，上部幾綠色，乾燥後則成暗稻稈色，上面有闊槽；鱗片與地下莖上者相似，疎生於基部，上部則光滑；葉體大，長四十至六十粉，闊二十至二十六粉，一次羽狀，闊長圓形，基部微縮小，兩面皆光滑；葉體草質，頗堅實，上面光綠色，下面色較淡；小葉在闊形淺羽狀分裂漸尖頭之頂下每側七至九個，相距二至三粉，長圓披針形，有柄長至五糎，最上者附著，長十七至十九粉，闊三至四粉，基部幾截形或幾圓形，頂端漸尖頭，邊緣遠裂爲闊圓形短裂片；中脉甚顯著，側脉開張，相距約七糎，支脉五至六對，遊離，上伸；孢子囊羣密生，終至連合，長五至七糎，循每羣之下部三四支脉而生，距邊緣頗遠；子囊羣蓋闊。

分布： 廣西。

圖註： 1. 植物全形（自然大） 2. 小葉之一部表示葉脉與孢子囊（放大二倍） 3. 葉柄基部之鱗片（放大二十四倍）。



DIPLAZIUM MACROPHYLLUM Ching

大　葉　雙　蓋　蕨

PLATE 26.

PHYLLITIS DELAVAYI (Franch.) C. Christensen

POLYPODIACEAE

PHYLLITIS DELAVAYI (Franch.) C. Chr. Ind. 492 (1906); Matthew in Journ. Linn. Soc. 39: 376 (1911).

Scolopendrium delavayi Franch. in Bull. Soc. Bot Fr. 32: (1885); Christ in Farnkraut. Erde 213; Diels in Nat. Pfl. Fam. I. 4. 233.

Rhizome short, small, erect, clothed up to the collum with blackish lanceolate subulate scales; *stipes* tufted, shining ebeneous, glabrous, slender, channelled above, 7-12 cm. long; *frond* simple, entire, orbicular or suborbicular, obscurely undulate, deeply cordate at the base with broad or rarely close sinus, 3-6 cm. across, *texture* pellucid, light green; *veins* flabellate, repeatedly dichotomous, free; *sori* borne on the secondary or tertiary veins, elongate, not attingent at the ends, inducium thin membranaceous, persistent, opening towards each other.

Distribution: Yunnan, Szechwan, Kweichow, also Burma.

Distinct for its simple orbicular deeply cordate leaves, resembling those of our water lilies. The size of leaves and the length of stipes vary great deal, some plants having leaves as small as 1.5 cm. across, provided with rather a long stalk, others having stalks not exceeding 1 cm. in length but with rather large leaves. A fairly common fern in W. China, thriving best in moist shades in wooded gorges and ravines.

Plate 26. Fig. I. Habit sketch (natural size). 2. A portion of frond, showing venation and sori (natural size). 3. Scales from rhizome (x 20).

第二十六圖

荷葉對開蓋蕨（水龍骨科）

PHYLLITIS DELAVAYI (Franch.) Christensen.

地下莖短小直立，被有黑色尖披針形鱗片；葉柄叢生，光黑色，光滑，細瘦，上面有槽，長七至十二粉；葉體簡單，全緣，圓形或幾圓形，不顯明波狀，基部心臟形，凹處闊或殊窄，直徑三至六粉，透明，膜質淺綠色；葉脈扇狀，多次歧出，遊離；孢子囊群生於第二次或第三次支脈上，長形；子囊羣蓋薄膜質，永存相對開。

分布：雲南，四川，貴州；緬甸亦有之。

此種之特性爲其圓形具深心臟形基部之單葉，形狀頗似睡蓮，其葉之大小與葉柄之長短變易甚大，葉體有小至一·五粉直徑，而有頗長之葉柄，或葉柄有長止一粉而葉體頗大者；此種在中國西部頗普通，喜生有樹木山峽之陰濕處

圖註： 1. 植物全形(自然大) 2. 葉體之一部表示葉與孢子囊群(自然大) 3. 地下莖上之鱗片(放大二十倍)。

PHYLLITIS DELAVAYI (Franchet) C. Christesin

荷 葉 對 開 蓋 蕨

PLATE 27.

PHYLLITIS CARDIOPHYLLA (Hance) Ching

DOLYPODIACEAE

PHYLLITIS CARDIOPHYLLA (Hance) Ching, Comb. nov.

Micropidium cardiophyllum Hance in Journ. Bot. (1883) 268.

Asplenium cardiophyllum Baker in Ann. Bot. 5: 311 (1891); C. Chr: Ind. (1906); Matthew in Journ. Linn. Soc. 39: 344 (1911).

Rhizome terete, wide-creeping, 3-4 mm. across, clad in dense, minute shining brown, spreading setae; *stipes* 2-5 cm. apart, uniseriate, slender, flexible, somewhat incrassate at the base, shining ebeneous, 3-sulcate on the upper side with the middle groove the broadest, all extending from the base up to the apex, broadly keeled on the under side, to 20 cm. or more long, scarcely 2 mm. broad at the base, not articulate to the rhizome; *frond* simple, deeply cordato-ovate in outline, acuminate, with broad rounded, sometimes rotundo-truncate auricle on each side at the base, 10-15 cm. long, 7-10 cm. broad, margin entire, usually somewhat obscurely undulate, very rarely sinuate, basal sinus 5-10 mm. broad, 2-3 cm. deep, usually open, sometimes close by the imbrications of the auricles; *texture* chartaceous, glabrous, pellucid, light green above, pale below, *costa* rather prominent below except towards the apex, the lower half similar to the stipe in coloration, inconspicuous above, lateral veins very fine, scarcely seen on the under surface, but very distinct when held up against light, obliquely patent, 1.5—2.2 mm. apart, parallel, 3-4-dichotomously branched and meeting once or twice near the margin forming mostly one sometimes two rows of narrowly linear areolae between the costa and margin; with somewhat thickened mostly free or sometimes connivent apex ended submarginally; *sori* linear, 2-3 cm. rarely more long, nearer to the costa than the margin, about 1-1.5 cm. from the margin, 3-5 mm. or farther from the costa, the lower ones often scolopendrioid, the upper ones usually asplenioid, inducia of the same shape as the sori, membranaceous, grayish-white, margin entire.

Distribution: Endemic in the Island of Hainan, S. China, also known in Formosa.

Plate 27. Fig. I. Habit sketch (natural size). 2. A lower portion of frond, showing venation and sori (x 2½). 3. Sporangia (x 116). 4. Scale from rhizome (x 40).

This interesting little fern was first collected in the Island of Hainan by Rev. B.C. Henry, November 20, 1882 and named by Dr. Hance as *Micropodium cardiophyllum* which was changed later to *Asplenium* by Baker and has remained as such ever since. A recent careful examination of an ample stock of materials from Hainan* has vividly convinced me of considering this species most fit as a legitimate member of *Phyllitis* by the presence of its scolopendrioid sori on the lower part of the froud, although they all gradually become asplenioid as go upward. Of about 50 plants examined by me, I frond that about one-third, which are in full fruitification, exhibits the character peculiar to the genus, and, moreover, that the scolopendrioid sori seem mostly confined to the lower one-third of the frond; while those in the upper 2-3 are almost all strictly of asplenioid nature. It is most likely that the type specimens for *Micropodium cardiophyllum* Hance are plants with sori in asplenioid condition as I have seen most of the plants are in, that perhaps chiefly accounts for the uncertainty of systematic position for the present species. Besides the asplenioid character of the sori on the upper part of the frond, it is very interesting, however, to note that while some of the sori are strictly of scolopenrioid nature, i. e. they are in opposite pairs, with their indusia directly opening towards each other, there are good many others, which are separated by one or more intervenning veins of the same group and still some others which are not in connvinent pairs, opening face to face, but either opening downward or upward singly. In spite of this deviation the reason for which was quite explicitely explained by W. J. Hooker (cf Sp. Fil. IV. p. I), it seems most fit to incoporate this plant in *Phyllitis* or Probably better still to remove into a distinct genus intermediate between *Asplenium* and *Phyllitis* as the nature of the its inducia indicate. In view of the presence of distinct midrib and the anastomozination of the veinlets towards the margin, the present species naturally falls in *ANTIGRAMME* Presl, Diels in Engl. and Prantl. Nat. Pfl. Fam. I: 4, 232 f. 124, E., a section of about 4 or 5 species endemic in Brasil. The present species differs from its far-off relatives by wide-creeping rhizome, deeply cordate-ovate frond of pellucid chartaceous texture, etc. The Japanese *P. ikenoi* (Mak.) C. Chr. exhibits, among other characters identical to the present species, the same irregularity in the nature of sori, and might perhaps be well regarded as identical to our species.—R. C. C.

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*I wish to tender my heartiest thanks to Prof. F. A. McClure, the College of Sciense, Lingnan University, Canton, for his courtesy in handing over to me for examination all the material at his disposal.—*R.C.C.*

第二十七圖

瓊崖對開蓋蕨(水龍骨科)

PHYLLITIS CARDIOPHYLLA (Hance) Ching.

地下莖管狀，匍匐甚廣，直徑約三四糎，密覆以小形光澤褐色開張之刺毛狀鱗片；葉柄相距二至五粉，疎生，細瘦，柔韌，基部略粗，黑色有光澤，上面具三槽，中間者最寬，皆由基部直達尖端，下面隆起，長達二十粉，有時更長，稀有基部寬達二糎者，與下地莖不成關節；葉體簡單深心臟卵圓形，漸尖頭，基部兩側形成扁圓形有時截圓形之耳，長十至十五粉，寬七至十粉，全緣，通常成不顯明之淺波狀，稀有成深缺刻者，基部凹處寬五至十糎，深二至三粉，通常開張，有時爲基部之耳所遮掩；葉體紙質，光滑，透明，上面淺綠色，下面尤淡，中肋在下面甚顯明，近頂部則不顯明，下半部顏色與葉柄相同，在上面不顯明，側脈甚細，在下面幾不能見，但持之向日光則立現，斜行開張，相離一糎至二糎半，平行，三四次歧出，至邊緣處常二股相合，形成一行有時兩行窄線形之網孔，葉脈梢端通常略粗，簡單，有時兩股相交，不及葉緣而止；子囊羣線形，長二三粉，稀有更長者，生中肋及葉緣之間，距葉緣一粉至一粉半，距中肋不過三五下部子囊羣形似 Scolopendrium 而上部者則通常似 Asplenium 所有者，子囊群蓋之形狀一如子囊羣，薄膜質，灰白色，全緣。

分布： 海南島原產， 臺灣亦有之。

圖註： 1. 植物全形（自然大） 2. 葉體之下部表示葉脈與子囊群（放大二倍半） 3. 孢子囊（放大一百十六倍） 4. 地下莖之鱗片（放大四十倍）。

本種初爲 B. C. Henry氏採自海南島，由 Hance 氏定爲 Micropodium cardiophyllum，其後 Baker 氏改定爲 Asplenium cardiophyllum，但作者在審愼研究多數海南標本之後，確定本種當隸於 Phyllitis 一屬，因葉體下半部之子囊群通常類似 Scolopendrium，逐漸向上始變爲 Asplenium 之模式也．作者研究標本中三分之一皆具此特性，且 Scolopendrium 模式之子囊群皆生於葉基三分二之部分，或 Hance 氏檢定之標本之定名爲 Micropodium cardiophyllum 者，實本種多數僅具 Asplenium 模式子囊群者，故其系統關係在當時不能決定之，本種性質介乎 Asplenium 與多數 Phyllitis 之間，與後者之亞屬 Antigramme 之性質最接近，但其異處則在匍匐甚廣之地下莖與深心臟卵圓形紙質之葉體，產於日本之 Phyllitis ikenoi (Mak.) C. Christensen 一種亦有具兩種子囊群之特性，習性亦同，或當歸納於本種也—仁昌

PHYLLITIS CARDIOPHYLLA (Hance) Ching

瓊崖對開蓋蕨

PLATE 28.

BLECHNUM EBURNEUM Christ.

BLECHNUM EBURNEUM Christ in Bull. Geogr. Bot. Mans (1902) 233, c. fig.; C. Chr. Ind. 153 (1906); Matthew in Journ. Linn. Soc. 39: 351 (1911).

Rhizome rather long, 4 mm. thick, oblique, clothed with dark brown, lanceolate subulate scales $\frac{1}{2}$ cm. long, entirely glabrous in other parts; *stipes* fasciculate, those of the sterile fronds 48 cm. long, those of the fertile somewhat longer, rigid, thick as raven's quill, reddish straminous; the sterile *frond* 20-30 cm. long, 2.5-4 cm. broad, elongate lanceolate, acuminate, gradually attenuate towards the base, pinnate; rachis quite distinctly sulcate above, terete underneath; pinnae 30-58 on each side, the lower ones strongly reduced into auricles, the upper ones closely pectinato-patent with very narrow acute sinuses, linear-lanceolate, falcate, broadly adnate but not decurrent and dilated on the upper side at the base, 1.8-2.5 cm. long, 4 mm. broad, very entire and acute, *texture* toughly coriaceous, whitish below and pale green above, margin strongly reflexed, provided at the point of insertion with the rachis with a dark brown deciduous linear scale; *veins* hidden completely; fertile *frond* as long as or slightly longer than the sterile, strongly attenuate towards the base, pinnate, pinnae numerous, remote, the lower ones about 1 cm. apart and much closer upward, adnate but contracted above the base with round broad sinuses, linear, pod-like, apiculate, $1\frac{1}{2}$ cm. long, $2\frac{1}{2}$ mm. broad, plane above, inflated below; inducium persistent, shining green, convex, covering the entire sorus.

Distribution: Szechwan, Hupeh, Kweichow.

To characterize this very distinct species, it deems fit to quote Christ's statesment, "Espèce tres particuliere par son tissu durement coriace, sa couleur claire, sepinnae fertiles enflees par dès sores cylindrique a indusie persistent". This unique fern was first collected by Père J. Bodinier, Nov. 4. 1897, in the vicinity of Kweiyang, Kweichow, on rocks by the stream, and about simultaneously by Rev. E. Faber in Omei Shan, W. Szechwan, the latter specimen was identified by Baker at Kew as *B. spicant* (L.) Wither. It is most likely as Dr. Christensen remarked that all *B. spicant* reported from W. China by earlier collectors is *B. eburneum* Christ..

Plate 28. Fig. 1. Habit sketch (natural size). 2. A fertile pinna (x 6). 3. The same, a cross section, showing inducium and attachment of sporangia (x 16). 4. Two sporangia with spores (x 75). 5. Scales from rhizome (x 30).

第二十八圖

象牙鳥毛蕨（水龍骨科）

BLECHNUM EBURNEUM Christ.

地下莖頗長，徑約三糎，斜行，被以暗褐色披針狀針形之鱗片，鱗片長五糎，其餘部分則完全光滑，葉柄簇生，在無孢子囊葉葉柄長四十八粉，有孢子囊葉葉柄略長，堅硬，粗似鴉翎管，紅稻稈色；無孢子囊葉葉體長二十至三十粉，寬二分半至四粉，長披針形，漸尖頭，至尾部漸窄縮，一次羽狀；葉軸上面有顯明之槽，下面則圓柱狀，小葉每側有三十至五十八個，在下部者短縮成耳狀，在上部者則密湊成櫛齒狀，開張，其凹處窄而銳，小葉綫形披針形，鐮狀彎曲，基部寬而貼附但不向上延展，上側基脚擴張，長約十八至二十五糎，闊四糎，全緣，銳尖頭，葉體厚革質，下面幾白色，上面淡綠色，邊緣反卷，在葉體與葉軸相連處生一暗褐色易脫落之鱗片，葉脈完全不顯，有孢子囊葉略長，基部頗瘦削，一次羽狀，小葉多數，疎生，近基部者相距至一粉左右，近頂部者則較密集，無柄，但附着部分較窄，其凹處鈍圓而寬，小葉綫形，形如莢，尖頭，長十五糎，闊二糎半，上面扁平，下面隆起，子囊群蓋永存，綠色有光澤，凸圓形，完全包覆子囊群。

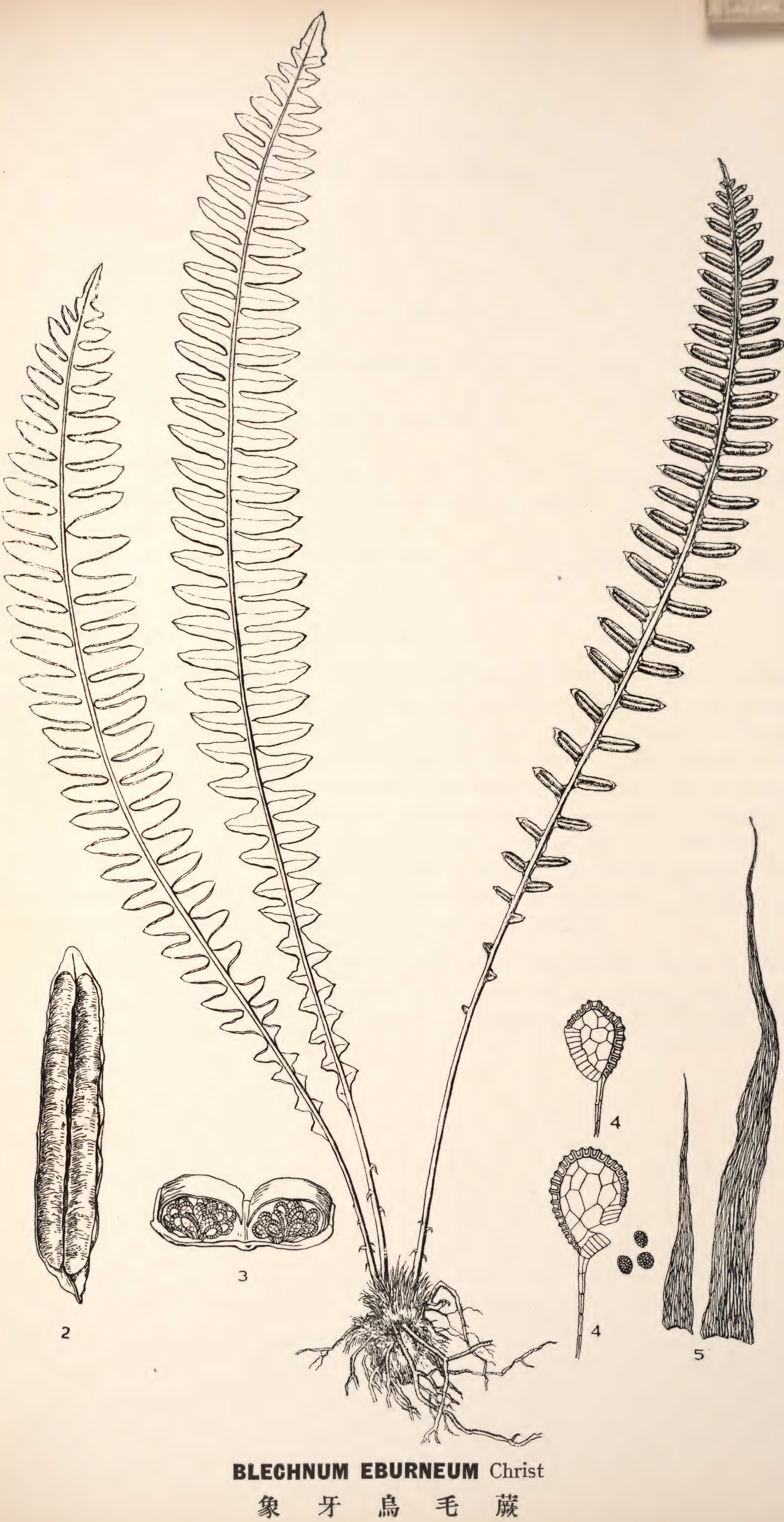
分布： 四川，湖北，貴州。

本種爲一特殊之種類，最早在 1897 年 Père J. Bodinier 採於貴陽附近溪畔石上，同時 Rev. E. Faber 又採得於四川之峨嵋山，後者經 Baker 氏定爲 Blechnum spicant (L.) Wither, 但經 Christensen 氏證明凡產自中國西部而前人定爲 B. spicant 之種皆爲 B. eburneum Christ.

圖註： 1. 植物全形之一部（自然大） 2. 一有子囊葉葉體之小葉（放大六倍） 3. 同上橫切面示其子囊蓋及子囊群附着之情況（放大十六倍） 4. 孢子囊及孢子（放大七十五倍） 5. 地下莖之鱗片（放大三十倍）。

Plate 28

第二十八圖



BLECHNUM EBURNEUM Christ

象 牙 烏 毛 蕨

PLATE 29.

GYMNOPTERIS VESTITA (Wall.) Underwood

POLYPODIACEAE

GYMNOPTERIS VESTITA (Wall.) Underw. in Bull. Torr. Club. 29:627 (1902); C. Chr. Ind. 342 (1906); Matthew in Journ. Linn. Soc. 39: 369 (1911).

Grammitis vestita Wall., List 12 (1828).

Gymnogramma vestita Presl, Tent. 218 (1838); HK. Ic. Pl. t. 115; HK. BK. Syn. Fil. 379; Christ Farnkraut. Erde 66.

Syngramma vestita Moore, Ind. LX (1857).

Neurogramme vestita Diels in Nat. Pfl. Fam. I. 4. 262

Rhizome rather thick, short, obliquely ascending, clothed with dense silky yellow linear-subulate scales; *stipes* 7-15 cm. long, wiry, but rigid, shining ebeneous, more or less furfuraceous, the scales at the base are dense and similar to those on rhizome; *fronds* 15-30 cm. long, 3-4 cm. broad, simply pinnate under a larger terminal pinna, pinnae 7-14 on each side, in distinct subopposte or alternate pairs, ovate or cordate-ovate or oblong, entire, often with an auricle at the superior base, obtusish, the lower ones distinctly stalked, the upper subsessile, the middle 2-2.5 cm. long, 7-12 mm broad; *texture* thick, but flaccid, both sides, especially the under, densely coated with fine velvety ferruginous hairs; *veins* flabellate towards the edge; *sori* forked, on the veins, almost completely hidden in hairs, indusium destitute.

Distribution; Himalayas to China: Yunnan, Szechwan, Shensi, Kansu, Chihli.

Plate 29. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and disposition of sori (x 3). 3. Sporangium (x 149). 4. Scale from the base of stipe (x 27). 5. Hair from the under side of pinna (x 27). 6. Hair from the upper side of pinna (x 27). 7. Scales from rhizome (x 27).

第二十九圖

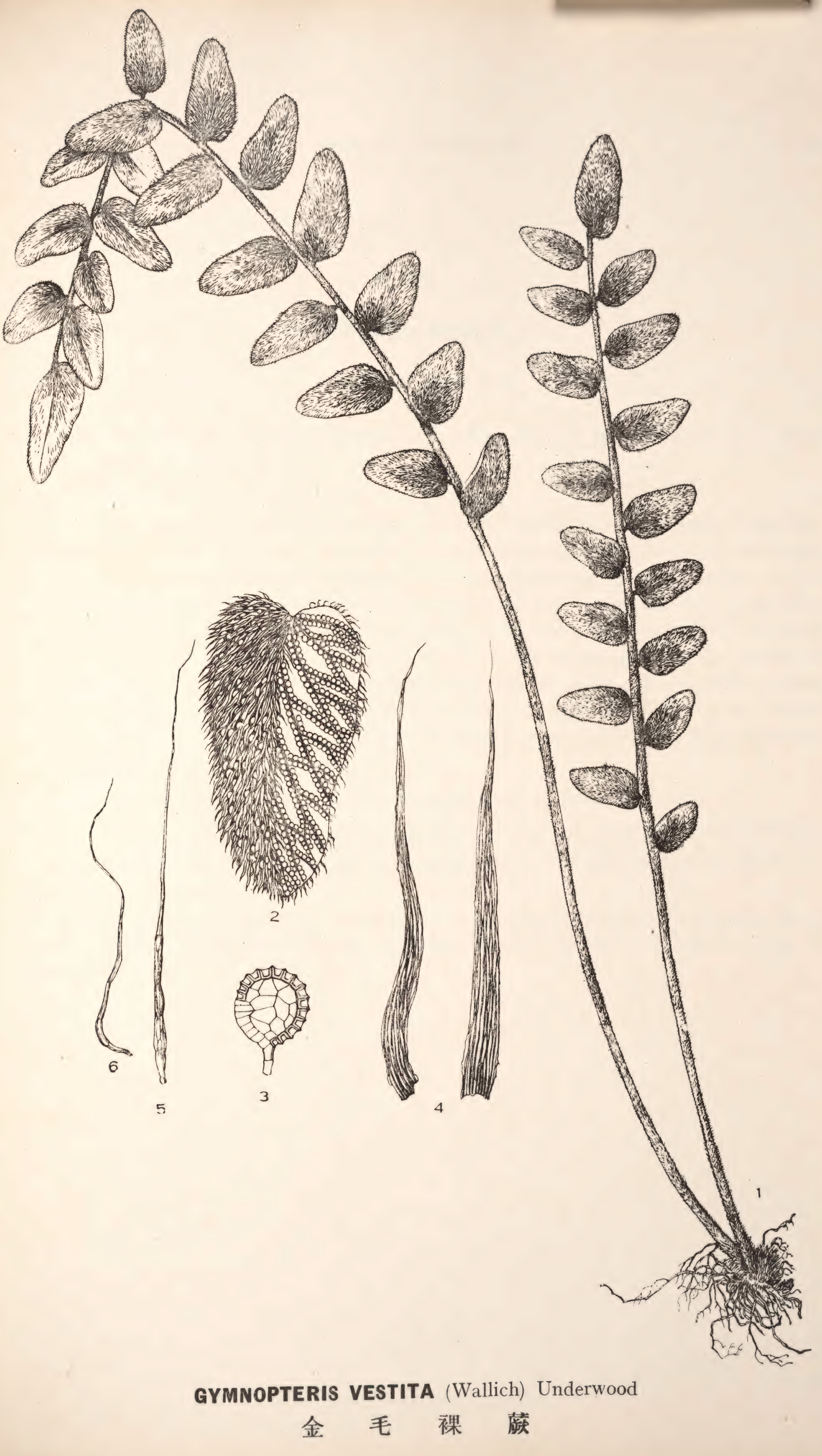
金毛裸蕨（水龍骨科）

GYMNOPTERIS VESTICA Underwood.

地下莖短頗肥壯 斜向上伸密覆以黃色絲光長尖披針形之鱗片；葉柄長七至十五粉，鐵絲狀，甚堅硬，黑色有光澤，密被粗糠狀鱗片，基部之鱗片一如地下莖上所生者；葉體長十五至三十粉，寬三至四粉，一次羽狀，頂部小葉最大，兩側小葉各四至七個，幾對生或互生，卵圓形心臟卵圓形或長圓形，全緣，在上面基部具一耳，鈍頭，上部小葉有顯明之柄，下部者則無柄，中部小葉長約二十至二十五糎，質厚而輭，兩面皆被絨狀鏽色之毛，葉脈近邊緣處作扇狀，子囊群分叉，生於脈上，幾全爲茸毛包覆，無子囊群蓋。

分布： 自喜馬拉耶山至中國雲南四川陝西甘肅河北皆有之。

圖註： 1. 植物全體（自然大） 2. 小葉示其葉脈及子囊羣之位置（放大三倍） 3. 子囊群（放大一百四十九倍） 4. 葉柄基部之鱗片（放大二十七七倍） 5. 葉體下面之茸毛（放大二十七倍） 6. 葉體上面之茸毛（放大二十七倍） 7. 地莖之鱗片（放大二十七倍）。



GYMNOPTERIS VESTITA (Wallich) Underwood

金　毛　裸　蕨

PLATE 30.

PLAGIOGYRIA HENRYI Christ

POLYPODIACEAE

PLAGIOGYRIA HENRYI Christ in Bull. Boiss. 7:8 (1899); Diels in Nat. Pfl. Fam. 1. 4 282; C. Chr. Ind 496 (1906).

Lomaria decurrens Baker in Kew Bull. (1906) 9.

Caudex erect, naked; *stipes* tufted, castaneous, base incrassate, sharply trigonous, those of the sterile frond 10-13 cm. long, those of the tertile frond 30-37 cm. long; sterile *frond* oblanceolate, thin membranaceous, simply pinnate, 37-45 cm. long, 6-10 cm. broad at the middle, gradually attenuate towards the base with the lowest 3 pairs reduced to distinct and broadly adnate auricles, the central pinnae lanceolate, conferted with very narrow sharp sinuses, 3-5 cm. long, 8-12 mm. broad at the base, which is broadly adnate, margin prominently serrate towards the apex and obscurely crenate below; *veins* lax, distinct, mostly once-forked or simple; fertile frond about 7 cm. broad, pinnae far apart, 4 cm. long, 3-4 mm. broad, reduced towards the base, linear, distinctly stalked and beaked at the apices.

Distribution: Yunnan, Anwhei, Chekiang, and also Annam.

Distinguished by its long oblanceolate frond, gradually attenuate downward with the lower pinnae reduced to distinct auricles and by its stalked fertile pinnae distinctly beaked at the apex.

Plate 30. Fig. 1 Habit sketch (natural size). 2. A sterile pinna, showing venation, (x 2) 3. A cross section of fertile pinna, showing attachment of sori (x 27) 4. A sporangium (x 76). 5. Two spores (x 145).

第 三 十 圖

亨氏瘤足蕨（水龍骨科）

PLAGIOGYRIA HENRYI Christ.

莖部直立，裸露無鱗，葉柄簇生，栗褐色，基部粗壯，三稜，無子囊葉長十至十三粉，有子囊葉長達三十至三十七粉，無子囊葉葉體披針形，薄膜質，一次羽狀，長三十七至四十五粉，中部闊六至十粉，近基部漸窄縮，最低三對小葉有顯明寬形附著之耳，中部小葉披針形，其間凹處窄而銳，長三至五粉，基部闊八至十二糎，無柄，近頂部邊緣銳鋸齒狀，下部不顯明圓齒狀；葉脈頗稀，顯明，不分叉或一次分叉；有子囊葉葉體約寬七粉，小葉相距較遠，長四粉，闊三四糎，基部窄瘦，線形，有柄，尖端喙狀。

分布： 雲南，安徽，浙江，在安南亦有之。

本種特著之性質爲長披針形之葉體漸向下窄瘦，至基部小葉則直成耳狀，有子囊葉之尖端成喙狀。

圖註： 1. 植物全形之一部（自然大） 2. 無子囊葉之小葉示其葉脉（放大二倍） 3. 有子囊葉之橫斷面示其子囊群着生狀況（放大二十七倍） 4. a.（下圖） b.（上圖）孢子囊（放大七十六倍） 5. 兩孢子（一百四十五放大倍）。

PLAGIOGYRIA HENRYI Christ

亨氏瘤足蕨

PLATE 31.

ADIANTUM GREENII Ching (fig. 1-5)

POLYPODIACEAE

ADIANTUM GREENII Ching in Sinensia 1: 8 (1929).

Rhizome short, profusely fibrous-rooted, scales blackish, dense, ascending, linear-subulate; *stipes* 2-3 cm. long, caespitose-fasciculate, dark ebeneous, naked, capillaceous and so is the rachis; *fronds* 1.5-3.5 cm. long, rarely longer, about 2 cm. broad, simply pinnate; pinnae 3-4, someimes 2 only, 6-8 mm. apart, petiolate (petioles 1½ mm. long), erect-patent, the terminal one with a petiole 5-7 mm. long, articulate at base, leaving a persistent petiole upon falling, broadly short-triangular, rarely oblong-obovate, rotundo-cuneate and entire at base, truncate and very obscurely undulate on the broad truncate apex, 6-9 mm. long, 7-10 mm. broad; *veins* 4-5, flabellate from the base, each again 3-5 forked, veinlets fine, distinct; *sori* large, solitary, placed at the apex, indusium transversely oblong-reniform, 4-6 mm. long, 1.3 mm. broad, dark brown, attached to a broad shallow sinus; *texture* subcoriaceous, translucent, bluish on both sides.

Distribution: Kwangsi.

Plate 31. Fig. 1. Habit sketch (natural size). 2. A pinna, showing venation and sorus (x 3). 3. Scales from rhizome (x 48). 4. Sporangia (x 100). 5. Dorsal side of inducium, showing attachment of sori (x 10).

第三十一圖（一至五圖）

格氏鐵線蕨（水龍骨科）

ADIANTUM GREENII Ching.

地下莖短，多鬚根，鱗片黑色，密生向上，線形，尖端細針狀；葉柄長二三粉，簇生如草叢，深黑色，無鱗片，纖細如絲狀，葉軸亦如之；葉體長十五至三十五糎，稀有略長者，寬二糎，一次羽狀；小葉三四個，有時僅兩個，相距約六至八糎，有柄，柄長一糎半，直立舒展，頂部小葉長五至七糎，基部耳狀，脫落時葉柄殘留葉軸上，寬短三角形，稀有長倒卵形者，基部圓楔形全緣，頂部截形，隱約成波狀，長六至九糎，寬七至十糎，主脈四五條從基部展開成扇狀，每條再三次或五次分叉，支脈細微不顯明，子囊群大，單生於頂部，子囊蓋扁長腎狀，長四至六粍，寬一·三糎，暗褐色，着生於寬而淺之邊緣缺刻上，略帶革質，稍透明，兩面皆呈藍色。

分布： 廣西。

圖註： 1. 植物全形（自然大） 2. 小葉一片示其脈及孢子囊群（放大三倍） 3. 地下莖上之鱗片（放大四十八倍） 4. 孢子囊（放大一百倍） 5. 子囊群蓋之背面，表示子囊群附著之狀（放大十倍）。

PLATE 31.

ADIANTUM NANUM Ching (fig. 6-9)

POLYPODIACEAE

ADIANTUM NANUM Ching in Sinensia 1: 9 (1929).

Rhizome very short, small, scales stiff, ascending, dense, subulate, blackish; *stipes* numerous, fasciculato-rosulate; capillaceous, but stiff, dark ebeneous, naked, so is the rachis, 1 cm. or less long; *fronds* 1-1.5 cm. long, 7 mm. broad, simply pinnate, glabrous, deep shining green above, bluish beneath; pinnae 3-5, rarely more, alternate, petiolate (petioles 1-2 mm. long, persistent), spreading orbicular to subtriangular, rounded or shortly cuneate at base, entire, obscure undulate on the outer margin, 2-4 mm. long, rarely longer; *texture* thick, stiff, coriaceous; *veins* fine, free, principal veins 2, radiating from the apex of petiole, erect-ascending, each again 1-2-forked towards outer margin, translucent; *sori* solitary, one to each pinna, small, inducium orbicular, entire, dark brown, coriaceous, attached to a rounded shallow sinus of the crenature, springing from veins and parenchyma, and reaching down as far as the centre of the pinnae.

Distribution: Kwangsi.

Plate 31. Fig. 6. Habit sketch (natural size). 7. A pinna, showing venation and sorus (x 8). 8. Scales from rhizome (x 48). 9. Sporangium (x 100).

第三十一圖（六至九圖）

矮鐵線蕨（水龍骨科）

ADIANTUM NANUM Ching.

地下莖甚短小，鱗片剛硬，密生向上，針狀，微黑；葉柄多數，簇生，纖細如絲，堅硬，深黑色，無鱗片，葉軸亦如之，長一粉弱；葉體長十至十五糎，寬七糎，一次羽狀，光滑，上面光深綠色，下面稍帶藍色，小葉三五個，稀更多，互生，有柄（柄長一二糎，永存，向外橫舒，圓形至略成三角形，基部圓形或短楔形，全緣，外緣稍成波皺，長二至四糎，稀更長，厚革質，脈紋甚細，具兩條粗脈，自小葉柄頂部射出，直行向上，至邊際再一次或二次分叉，稍透明，孢子囊群單生，每小葉上僅一枚，子囊蓋圓形，全緣，暗褐色，革質，附着於圓齒之闊而淺之缺刻上，由葉脈及薄膜組織生出，直達小葉之中部。

分布：廣西。

圖註： 6. 植物全形(自然大) 7. 一小葉示其脈及子囊群(放大八倍) 8. 地下莖之鱗片（放大四十八倍） 9. 孢子囊(放大一百倍)。

ADIANTUM GREENII Ching (1-5)

格 氏 鐵 線 蕨

ADIANTUM NANUM Ching (6-9)

矮 鐵 線 蕨

PLATE 32.

PTERIS DELTODON Baker

POLYPODIACEAE

PTERIS DELTODON Baker in Journ. Bot. 26: 226 (1888); C. Chr. Ind. 596 (1906); Matthew in Journ. Linn. Soc. 39: 389 (1911).

Pteris nana Christ in C. Chr. Ind. 603 (1906).

Pteris trifoliata Christ in Bull. Boiss. 7: 7 (1899); Diels in Nat. Pfl. Fam. 1. 4. 292 (non Fée 1857).

Rhizome short, erect, densely fibrous-rooted; *stipes* tufted (4-7), slender, naked, shining straminous, 10-30 cm. long; *frond* deltoid-ovate, simply pinnate, of thick coriaceous *texture*, 10-20 cm. long, green and glabrous on both sides; pinnae 3-5, with the terminal one much the largest, oblong-ovate to broad lanceolate, 5-15 cm. long, 1.2-2.5 cm. broad in the middle, sessile except the terminal one, which is cuneate at base and usually shortly petiolate, conspicuously inciso-dentate at the sterile tips, which is acuminate in the terminal pinna, and usually acute in the lateral ones; *veins* lax, branching at angles of 75° from the costa, simple or forked, very distinct; *sori* continuous from the base up to within a short distance of the tip of pinnae, inducium narrow, glabrous, dark-brown.

Distribution: Szechwan, Kweichow, Yunnan, Kwangtung.

This species is nearest to *Pteris cretica* L. from which differs in but fewer pinnae, of which the lowest are simple, the serrations in sterile parts are also different and further differs by laxer veins. The frond is generally trifoliate but larger forms often have five leaflets with the lower pair separate from the one next above by a wingless rachis about 1-2 cm. long. *Pteris nana* Christ from Yunnan is perfectly identical with Baker's type from Omei Shan, Szechwan, differing only in somewhat broader pinnae. A specimen, No. 8366, in Hongkong Herbarium from Kwangtung (without precise locality) appears almost congeneric with the present species, differing only by perfect entire sterile pinnae. *Pteris nana* Christ var. *quiquefoliata* Copel. from Fukien, a plant larger than the type having lateral pinnae cleft at the base, should be called *P. deltodon* Baker var. *quiquefoliata* (Copel.) Ching, if it does not represent a mere vigorous form of *P. cretica* L.—R. C. C.

Plate 32. Fig. 1. Habit sketch (natural size). 2. A portion of fertile pinna, dorsal side (x 2). 3. A fertile pinna. ventral side (x 2).

第三十二圖

巖鳳尾蕨（水龍骨科）

PTERIS DELTODON Baker.

地下莖短，直立，密生鬚狀根；葉柄簇生（四至七枚），細瘦，無鱗片，有光澤，稻稈色，長十至三十糎，葉體三角卵圓形，一次羽狀，厚革質，長十至二十糎，兩面皆綠色光滑，小葉三五個，頂端一個異常寬大，長卵圓形至廣披針形，長五至十五糎，中部寬十二至二十五糎，兩側小葉均無柄，頂端小葉楔形具短柄，其頂端漸尖頭，無子囊群，缺刻齒牙狀，兩側小葉頂端急尖頭，餘相似，葉脈殊疎，由中肋分出成成七十五度斜角，單股或分叉，甚顯明，子囊群由基部延展至小葉頂端之下，子囊群蓋窄，光滑，暗褐色。

分布： 四川，貴州，雲南，廣東。

本種與 Pteris cretica L. 相近，其異點爲小葉數較少，基部簡單，葉脈較稀，至於葉頂缺刻形狀亦不同，葉體通常俱生三小葉，但大者亦有時生五葉，基部一對小葉與中部小葉相離至一二糎，產自雲南之 Pteris nana Christ. 與 Baker 氏採自四川峨嵋之標本完全相同，止小葉略寬耳，香港博物院中採自廣東之第八三六六號標本亦同此種，但葉體全緣而無子囊群，Pteris nana Christ. var. quiquefoliata Copel.（福建產）比 Christensen 之原種稍大，若非 P. cretica L. 之強健品種，當改定名爲 Pteris deltodon Baker var. quiquefoliata (Copel.) Ching.—**仁昌**。

PTERIS DELTODON Baker

巖　鳳　尾　蕨

PLATE 33.

PTERIS HUI Ching.

POLYPODIACEAE

PTERIS HUI Ching in Sinensia 1 : 9 (1929).

Rhizome very short, upright ; scales linear-subulate, dark brown, rather thick, 2-3 mm. long ; *stipes* tufted, 4-8 together, naked, straminous, flattend upon drying, broadly channelled above, 6-17 cm. long, 2 mm. broad ; *fronds* short deltoid, uniform, bipinnate, 5-10 cm. long, a little less broad, glabrous on both sides ; lateral pinnae 1-2 pairs, opposite, petiolate ; the lower pair much the largest, with petioles 5-10 mm. long, 2-3-partite, pinnules oblong-lanceolate to oblong-ovate, 2.5-6 cm. long, 1.5-2 cm. broad at the middle, shortly petiolate or subsessile, distinctly inciso-dentate on the upper sterile portion ; the middle pair (if there any) simple, shortly petiolate or subsessile, of same shape and size as the lower ones ; the terminal pinna always simple, of same shape, but much longer (-9 cm.) petiolate ; rachis staminous, naked, wingless ; *texture* thick, stiff, coriaceous, shining light green (when living) ; *midrib* prominently raised below, rather flattened above, lateral veins numerous, distinctly raised above, patent, 1-1.5 mm. apart, ended near the base of the teeth, never in the mucron ; *sori* dark brown, linear, continuous from the base to within a short distance from the tip, or only up to the middle of the margin, or sometimes only a short way upward from the base, indusium narrow, rather thick, rigid, dark gray, continuous.

Distribution : Kwangsi.

Plate 33. Habit sketch (natural size).

第三十三圖

胡氏鳳尾蕨(水龍骨科)

PTERIS HUI Ching.

地下莖甚短，直立，鱗片線形，尖刺頭，暗褐色，頗厚，長二至三粉，葉柄四至八枚簇生，無鱗片，稻稈色，乾時扁平，上面有槽，長六至十七粉，關二糎；葉體短三角形，兩次羽狀，長五至十粉，稍窄，兩面皆光滑，兩側小葉一二對，對生，有柄，基部一對頗大，葉柄長五至十糎，小葉再分裂成二三個二次小葉，二次小葉長圓披針形，至長圓卵形，長二粉半至六粉，中部寬一粉半至二粉，具短柄或幾無柄，頂端無子囊群，顯然成缺刻齒牙狀，中部一對小葉簡單，具短柄或幾無柄，與基部一對形態修廣各相同；頂部小葉永爲簡單，形態亦相類，但柄較長，達九粉；葉軸稻稈色，無鱗片，亦無翼；葉體厚革質，堅硬，綠色，有光澤，中肋在下面隆起，上面平滑；支脈頗多，上面顯明，隆起，開張，相離一糎至一糎半，直達葉緣鋸齒之基部而止，從不突出成刺頭，子囊群暗褐色，線形，由下部直走至葉中部或近頂處而沒，有時僅在近基部處子囊群蓋窄而頗厚，堅實，暗灰色，連續。

分布： 廣西。

圖註： 植物全形(自然大)。

PTERIS HUI Ching

胡氏鳳尾蕨

PLATE 34.

PTERIS DIMORPHA Copeland

POLYPODIACEAE

PTERIS DIMORPHA Copel, in Phil. Journ. Sci. Bot. 3 C: 282 (1908); C. Chr. Ind, Suppl. 66 (1906-12); Matthew in Journ. Linn. Soc. 39: 389 (1911).

Rhizome short, ascending, about 4 mm. thick, densely fibrous-rooted, clad at the apex in minute subulate castaneous scales; *stipes* shining, reddish towards the base, dark straminous upward, narrowly winged on the uppermost part; *frond* strongly dimorphous, the sterile ones 10-15 cm. long, the fertile 25-30 cm. long, the sterile oblong-deltoid, tripartite, glabrous, of chartaceous *texture*, shining light green on both surfaces, lateral pinnae ovate, falcate, to 5 cm. long, deeply incised, segments about 5 on each side, close, oblong, obtuse, the terminal one much the largest, to 2 cm. long, sharply serrate or subentire, the middle pinna the largest, to 10-15 cm. long and 3-4 cm. broad, broad lanceolate, gradually acuminate, with 6-10 segments on each side, the lowest ones reduced and narrowly decurrent along the rachis; fertile frond 10-15 cm. long (sometimes only 5 cm. long), pinnate like *Pteris ensiformis* Burm. with 1-2 pinnae on each side under the terminal one, the lowest ones forked or simple, 6 mm. broad, all decurrent in a narow wing, the terminal pinna the largest, to 10 cm. long, often irregularly pinnatifid; *inducium* narrow, continuous to the blunt serrate apex, dark gray.

Distribution: Kwangtung.

This distinct and rather uniform species was first discovered by Dr. Charles G. Matthew of the British Navy in the mountains in southeastern Kwangtung, and later in 1927 was collected in the mountains on North River by Prof. W. Y. Chun, of Botanical Laboratory, Canton, whose copious materials have recently been received by me. The specimens match the type very well, except that it show somewhat less dimorphism and in this respect it may be well considered as an intermediate between *P. multifida* Poir and *P. ensiformis* Burm.—R. C. C.

Plate 34. Fig. 1. Habit sketch (natural size). 2. A portion of sterile segment, showing venation and serration (x 4). 3. A portion of fertile segment, showing venation and inducium (x 4).

第三十四圖

二形鳳尾蕨（水龍骨科）

PTERIS DIMORPHA Copeland.

地下莖短，上升，徑約四糎，具密生鬚根，頂部密被小形栗色針形之鱗片，葉柄有光澤，近基部略帶紅色，上部暗稻稈色，頂部有窄翼；葉體顯然具兩種形態，無子囊葉長十至十五粉，有子囊葉長二十五至三十粉，無子囊葉長三角形，三出，光滑，紙質，上面淺綠有光澤，側生小葉鐮狀卵圓形，長五粉，有深缺刻，裂片每側五枚，長圓形，鈍頭，頂端一片最大長二粉，銳鋸齒狀或幾全緣，中央小葉最大，長十至十五粉，寬三四粉，廣披針形，漸尖頭，每側有六至十個裂片，基部裂片窄縮，循葉軸向下延展；有子囊葉長十至十五粉，有時僅長五粉，羽狀一如 Pteris ensiformis Burm.，頂端小葉之下每側各具一二枚小葉，基部小葉分叉，或簡單，寬達六糎，皆向下延長，形成窄翼，頂端小葉最大，長達十粉，通常不規則羽狀分裂；子囊群蓋狹窄連續達齒狀之鈍圓葉端，暗灰色。

分布： 廣東。

本種爲 Charles G. Matthew 博士發見於廣東東南部之山中，其後陳煥鏞教授又採之於北江附近，作者詳爲審定與 Matthew 之標本無異，但其無子囊葉及有子囊葉之差別較少耳，本種位置當介乎 Pteris multifida Poir. 與 Pteris ensiformis Burm. 之間一仁昌。

圖註： 1. 植物全體（自然大） 2. 無子囊葉之裂片示其葉脈及鋸齒（放大四倍） 3. 有子囊葉之一部示其葉脈及子囊群蓋（放大四倍）。

PTERIS DIMORPHA Copeland

二　形　鳳　尾　蕨

PLATE 35.

PTERIS ACTINIOPTEROIDES Christ

POLYPODIACEAE

PTERIS ACTINIOPTEROIDES Christ in Bull. Boiss. 7: 6(1899) ; Diels in Nat. Pfl. Fam. 1. 4. 292 ; C. Chr. Ind. 591 (1906) ; Matther in Journ. Linna. Soc. 39:388 (1911) ; C. Chr. in Medd. Göteb. Bot. Trädg. I. 96 (1924).

Rhizome short ; *stipes* in dense tuft, upright or spreading, slender, angular, 3-6 cm. long, reddish-straminous or light ebeneous, polished ; *frond* dimorhpous, the sterile one much shorter than the fertile, quiquefoliate, the 7-15 cm. long, broadly deltoid, bipinnate, pinnae 2-3 on each side under the tri-foliolulate terminal one, the basal ones shortly petiolate, usually 2-3-forked, the middle ones forked or simple, the uppermost ones always simple, segments equal, linear, 4-6 cm. long, 1-2 mm. broad, margin entire except the apex, which is usually sharply serrate, *texture* chartaceous, glossy, entirely glabrous, rachis reddish ; *inducium* rather broad ($\frac{1}{2}$ mm. broad), whitish, continuous with entire margin, not extending to the serrated apex of the segment.

Distribution : Yunnan, Szechwan, Hupeh.

A very interesting little fern, which is, in habit, somewhat intermediate between *P. multifida* Poir. and *P. dactylina* Hk , from both of which differs, by smaller size, very narrow fertile segments and castaneous stipes and rachis. In was first collected in Mengtze, Yunnan, by A. Henry and reported ever since from Szechwan and Hupeh. According to Christensen the plant from W. szechwan grows to 40 cm. tall including the stipe, with 6-7 pairs of lateral pinnae under a fan-shaped apex consisting 7 segments; but all the specimens, No. 2965, collected by Prof. K. K. Tsoong (1921) on Tai Hwa Shan, Yunnan, perfectly agree with Christ's type in dimension, and it is evidently a common fern, growing in the crevices of exposed rocky cliff as his notes indicate.—R. C. C.

Plate 35. Fig. 1. Habit sketch (natural size). 2. An ultimate segment, showing venation and and inducia, (x 3). 3. A cross section of fertile segment, showing inducia and sori (x 5).

第三十五圖

猪鬣鳳尾(水龍骨科)

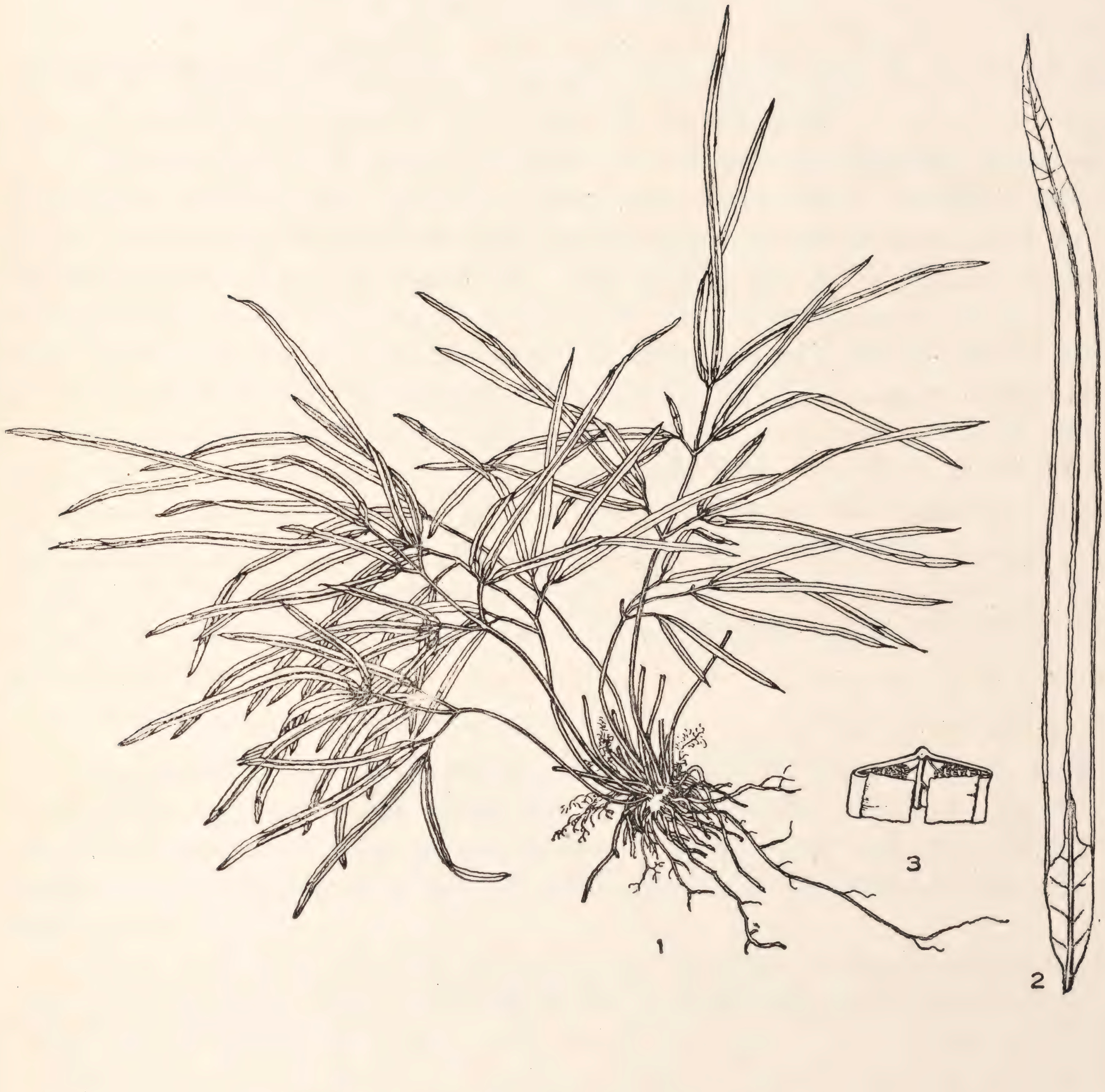
PTERIS ACTINOPTEROIDES Christ.

地下莖短；葉柄簇生，直立或開張，細瘦有稜，長三至六粉，紅稻稈色，或淺黑色，平滑；葉體具兩種形態，無子囊葉較有子囊葉短，具五個小葉，有子囊葉長十至十五粉，廣三角形，二次羽狀，頂端小葉三出分裂，以下側生小葉每側各有二三個，在基部者具短柄，二或三出，中部者簡單或分叉，最上者皆簡單，小葉裂片等長，線形，長四至六粉，寬一二糎，全緣，近梢端則作銳鋸齒狀，紙質，有光澤，完全光滑，葉軸紅色；子囊群蓋甚寬，約半糎白色，延葉緣附着，止於裂片之齒狀頂端。

分布：雲南，四川，湖北。

本種習性介乎 Pteris multifida Poir. 及 Pteris dactylina HK. 之間，但異點則爲形態較小，無子囊裂片較短，及葉柄葉軸作栗色，此種首由A. Henry 發見於雲南，按 Christensen 之記載，產於四川西部者高至四十粉，上着六七對小葉，但鍾觀光教授由雲南採得之標本(第二千〇六十五號)與 Christensen 氏之記錄幾全相同，在雲南殊爲習見之種也。

圖註： 1. 植物全形(自然大) 2. 小葉最上裂片示其脈紋及子囊群 (放大三倍) 3. 有子囊葉之橫剖圖示其子囊群及子囊群蓋 (放大五倍)。



PTERIS ACTINIOPTEROIDES Christ

猪鬣鳳尾蕨

PLATE 36.

PTERIS PAUPERCULA Christ

POLYPODIACEAE

PTERIS PAUPERCULA Christ in Bull. Geogr. Bot. Mans (1906) 131 ; C. Chr. Ind. Supl. 67 (1906-13) ; Matthew in Journ. Linn. Soc. 39:389 (1911).

Rhizome thick, short, densely clothed in brown lanceolate subulate scales and so is the stipe ; leaves densely fasciculate, numerous ; *stipes* erect, reddish-straminous, terete, rigid and like rachis densely asperous with subulate and setaceous short spreading brown slender scales, falling off at distance of 2-3 cm. above the base ; stipes of sterile leaves 6 cm, long, those of the fertile 15 cm. long, the sterile *frond* 6 cm. long, 3 cm. broad, oval-oblong, bipinnatifid; pinnae remote, about 5 on each side, the lowest shortly petiolate, cut down nearly to the costa with lower segments forked again, the upper ones adnately decurrent, simple or forked, segments obtuse, ½ cm. long and broad, margin double crenulate; the fertile frond 11 cm. long, 6 cm. broad, bipinnate; pinnae remote, 5-6 on each side, the lower ones pinnate into 5-6 pinnules, the upper ones simple, pinnules linear, 4-5 cm. long, 2-3 mm. broad, acute, entire; *veins* hidden, twice or thrice forked; color light green, surfaces glabrous, opaque, *texture* herbaceous, somewhat pellucid; *sori* continuous to the apex, ½ mm. broad, indusium membranaceous, narrow, lacerato-fimbriate.

Distribution: Szechwan.

A remarkable fern discovered by E. H. Willson in W. China, 1973. In habit it closely allied to *P. ensiformis* Burm. but differs in smaller dimension, much less pronounced dimorphism between the fertile and sterile leaves and, particularly, by densely scaly reddish-brown stipes and rachis, and double crenulate pinnules of the sterile leaves.

Plate 36. Fig. 1. Habit sketch (natural size). 2. A portion of fertile segment, dorsal side (x 20). 3. Scale from the upper part of rachis (x 108). 4. Scales from the base of stipe (x 30). 5. Venation and attachment of sori (x 40).

第三十六圖

黃毛鳳尾蕨(水龍骨科)

PTERIS PAUPERCULATA Christ.

地下莖肥短，密覆以褐色尖披針形之鱗片，葉柄如之，簇生，多數，直立，紅稻稈色，管狀，堅硬，密被以針狀，有刺頭，短小，開張，褐色之鱗片，鱗片至距基部二三粉處則脫落；無子囊葉柄長六粉，有子囊葉達十五粉；無子囊葉體長六粉，寬三粉，長卵圓形，二次羽狀，小葉遠離，每側有五個，近基部者有柄，削去至中肋，而下部之小裂片更分叉，上部裂片附着向下延長，簡單或分叉，裂片鈍頭，修廣各約半粉，邊複波齒狀；有子囊葉長十一粉，寬六粉，一次羽狀，小葉遠離，每側五六個，最下一個再裂成五六個二次小葉，在上部者則簡單，二次小葉綫形，長四至五粉，寬二至三糎，銳頭，全緣；葉脈不顯明，二三次分叉；葉體淡綠色，光滑，膜質，微透明；子囊群連續及頂部，寬半糎，子囊群蓋薄膜質，狹窄，不規則流蘇狀分裂。

分布： 四川。

本種在 1903 年爲 E. H. Wilson 氏發見於四川，其習性與 Pteris ensiformis Burm. 相近，但較小，有子囊葉與無子囊葉之差異較少，尤顯著之異點爲密生紅褐鱗片葉柄及葉軸與無子囊葉之複圓齒狀之裂片。

圖註： 1. 植物全形（自然大） 2. 有子囊葉裂片之一部正面（放大二十倍） 3. 葉軸上部之鱗片（放大一百零八倍） 4. 葉柄基部之鱗片（放大三十倍） 5. 葉脈及子囊群之附着狀況（放大四十倍）。

PTERIS PAUPERCULA Christ

黃毛鳳尾蕨

PLATE 37.

PTERIS EXCELSA Gaudichaud-Beaupré

POLYPODIACEAE

PTERIS EXCELSA Gaud. in Freyc. Voy. Bot. 388 (1824); HK. Sp. Fil. II. t. 136; HK. BK. Syn. Fil. 159; Bedd. Ferns S. Ind. t. 218, Handb. 114 (1892); Christ, Farnkraut. Erde. 167; Diels in Nat. Pfl. Fam. I. 4. 292; C. Chr. Ind. 597; v. A. v, R. Malay. Ferns 368 (1908); Matthew in Journ. Linn. Soc. 39: 389 (1911).

Pteris terminalis Wall. List 101 (1828); Ag. Rec. 20 (1839).

Rhizome short, thick, erect, densely clothed in narrow lanceolate brown scales; *stipes* tufted, stout, to 90 cm. long, 6-10 mm. thick, erect, naked, glossy, green or straminous or brownish, scales sparse and brown; *frond* $1\frac{3}{4}$—2 m. long, broadly deltoid, terminal pinna to 30 cm. long or longer, 7.5 cm. broad, cut down to the costa into numerous rather closely placed falcate lanceolate segments on each side 4 cm. long, 6-10 mm. broad, dilated, narrowly oblique decurrent, slightly serrated on the barren parts, lateral pinnae 5-10 on each side, similar to the terminal one, the lowest much the largest, over 30 cm. long, 15 cm. apart, oblong-lanceolate, pinnatifid down to the rachis under the entire lanceolate caudate apex, sometimes forked in the basal pinnae; *texture* chartaceous, light green above, pale or glausescent beneath, naked on both surfaces; *veins* once-forked, 3 mm. apart at the base; *sori* not reaching the apex of the segments, inducium gray, membranaceous, entire.

Distribution: India, the Philippine Islands, Malayasia, Sandwich Islands, Corea, China: Szechwan, Yunnan, Kweichow, Hupeh, Kwangsi.

Plate 37. Fig. 1. A portion of the plant (natural size). 2. Two ultimate segments, showing venation and sori, (enlarged).

第三十七圖

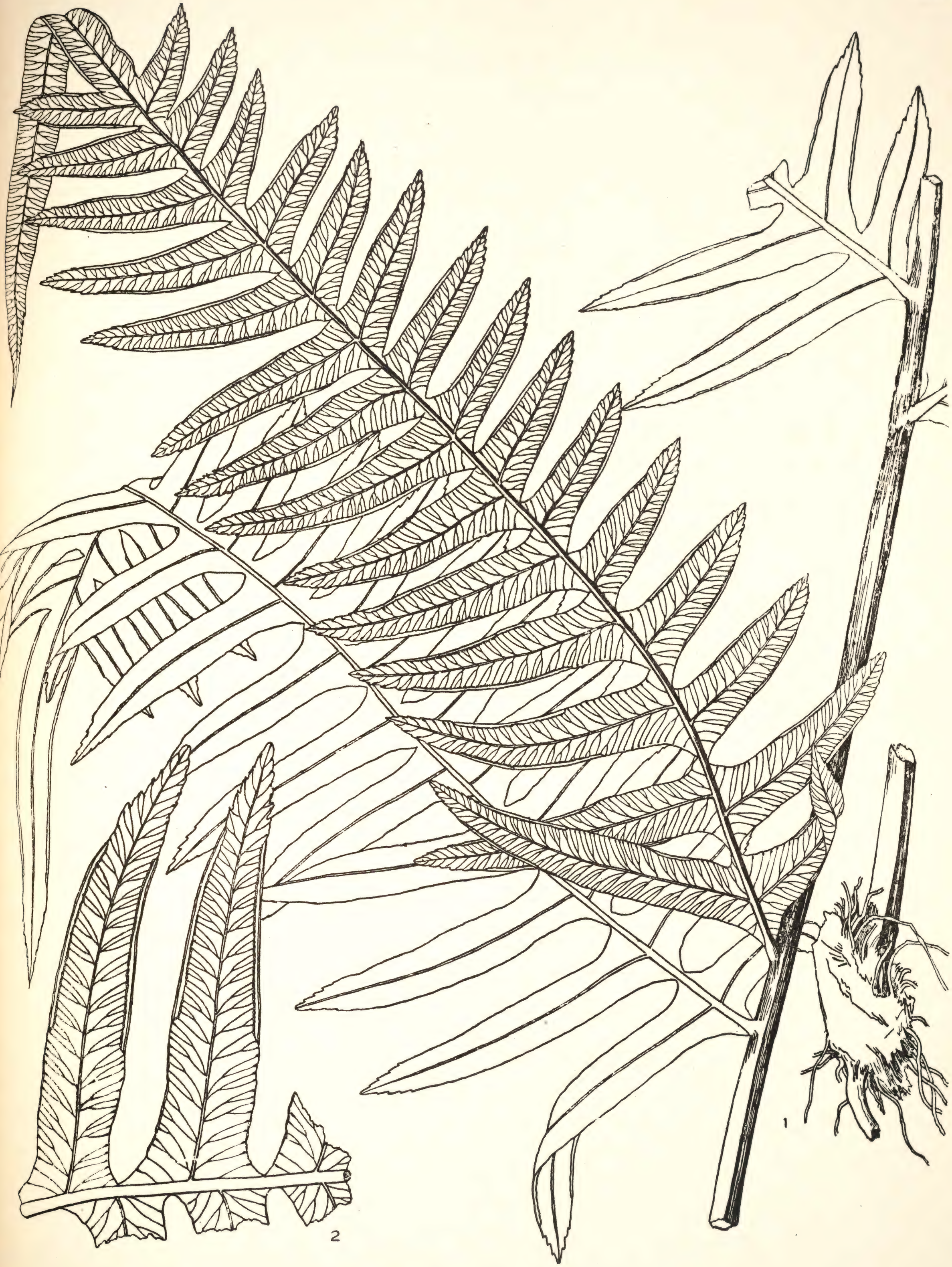
PTERIS EXCELSA Gaudichaud-Beaupre

溪鳳尾蕨（水龍骨科）

地下莖短，粗壯，直立，密覆以狹披針形褐色鱗片；葉柄簇生，粗壯，長達九十粉，徑六至十糎，直立，裸露，有光澤，綠色或稻稈色或幾褐色，鱗片甚稀，褐色；葉體長一粁又四分之三至二粁，廣三角形，頂端小葉達三十粉，或稍長，闊七粉半，削至中肋形成多數密集鐮狀披針形之裂片長約四粉，寬六至十糎，擴張，窄斜向下延長，在無子囊葉略成鋸齒狀，側生小葉每側各五至十個，形與頂端小葉幾同，在基部之小葉最大長越三十粉，相距十五粉，長圓披針形，頂端簡單披針尾狀，頂端以下羽狀分裂直至葉軸，有時基部小葉分叉；葉體紙質，上面淺綠色，下面色較淡或有光，無毛，葉脉一次分叉，脉基相距三糎；子囊群不達到裂片之頂端，子囊群蓋灰色，薄膜質，全緣。

分布： 印度，菲律賓群島，馬來群島，檀香山，高麗，與中國四川，雲南，貴州，湖北，廣西等處。

圖註： 1. 植物全形之一部（自然大） 2. 小葉兩頂端裂片示其葉脉及子囊群（放大）。



PTERIS EXCELSA Gaudichaud

溪　鳳　尾　蕨

PLATE 38.

VITTARIA PAUCIAREOLATA Ching.

POLYPODIACEAE

VITTARIA PAUCIAREOLATA Ching in Sinensia 1: 11 (1929).

Rhizome creeping, rather thick; scales dense, blackish; lanceolate with a long hair-pointed apex, distinctly reticulate, 5 mm. long; *fronds* remote, grass-like, 90-130 cm. long (including stipes, which are 10-14 cm. long, terete, naked), 1.3-1.5 cm. broad, linear, tape-like, pendulous, gradually attenuate from 2/3 way downward into the stipe, but not or very slightly narrowed towards a broad rounded or blunt apex; *texture* subcoriaceous, translucent, flaccid, *midrib* flattened and indistinct on both surfaces, lateral veins slender, 3-4 subparallel to the midrib, translucently distinct and connected by a transverse intramarginal vein, not rarely forked and often towards the apex of the frond scantily anastomosing into narrow linear meshes; *sori* long, reaching from near the base to the very apex, sunk in an extrorse marginal groove, 1/10 cm. deep.

Distribution: Kwangsi, Hainan.

Plate 38. Fig. 1. Habit sketch (natural size). 2. A cross section of frond (x 7). 3. A cross section of soriferous margin, showing inducium (x 50). 4. Scales from rhizome (x 36).

第三十八圖

闊葉書帶蕨（水龍骨科）

VITTARIA PAUCIAUREOLATA Ching.

地下莖匍匐，頗粗壯，鱗片密生，幾黑色，披針形，尖端細長，引展成長鬚，脈絡顯明網狀，長五糎，葉體遠離，禾草狀，長九十至一百三十粉（包括長十至十四粉之葉柄，葉柄圓管狀，無鱗片）寬十三至十五糎，綫形，下垂，由距基脚三分二部分漸向下窄縮形成葉柄，但上部稍擴張成廣圓形或鈍形尖端，幾革質，略透明，乾皺，中肋扁平，在兩面皆不顯明，側脈細，三四條，與中肋幾平行，不甚透明，但清晰可辨，由近葉緣之橫脈相連貫，有時分叉，近葉梢處通常相幷成少數窄綫形之網孔，子囊群細長，從葉基直達頂端，陷入向外卷折之槽中，深一糎。

分布： 廣西，海南島。

圖註： 1. 植物全形（自然大）. 2. 葉之橫斷面（放大七倍）. 3. 葉緣有子囊群部分之橫斷面示子囊羣蓋（放大五十倍）. 4. 地下莖上之鱗片（放大三十六倍）。

VITTARIA PAUCIAREOLATA Ching

闊葉書帶蕨

PLATE 39.

VITTARIA NANA Ching.

POLYPODIACEAE

VITTARIA NANA Ching in Sinensia 1: 11 (1929).

Rhizome creeping, slender, clad in moderately dense dark short, castaneous, linear-subulate scales with obscurely denticulate margin; *fronds* numerous, caespitose, erect, 3-7 cm. long, 1-1.5 mm. broad, linear, gradually narrowed into the base of a short stipe, slightly narrowed towards a blunt, rarely acuminate apex, margin revolute, midrib deeply sulcate above, broadly keeled below; *texture* subcoriaceous, flaccid, glabrous; *veins* hidden; *sori* short, confined to upper 1/3, and quite a way short from the apex, often one-sided, and placed midway between costa and margin, which is at first rather broadly revolute, and finally relaxed.

Plate 39. Fig. 1. Habit sketch (natural size.) 2. Fronds, showing different stages of opening induciate margin, (enlarged). 3. A cross section of frond, showing disposition of sori (x 30). 4. Scales from rhizome (x 20).

第三十九圖

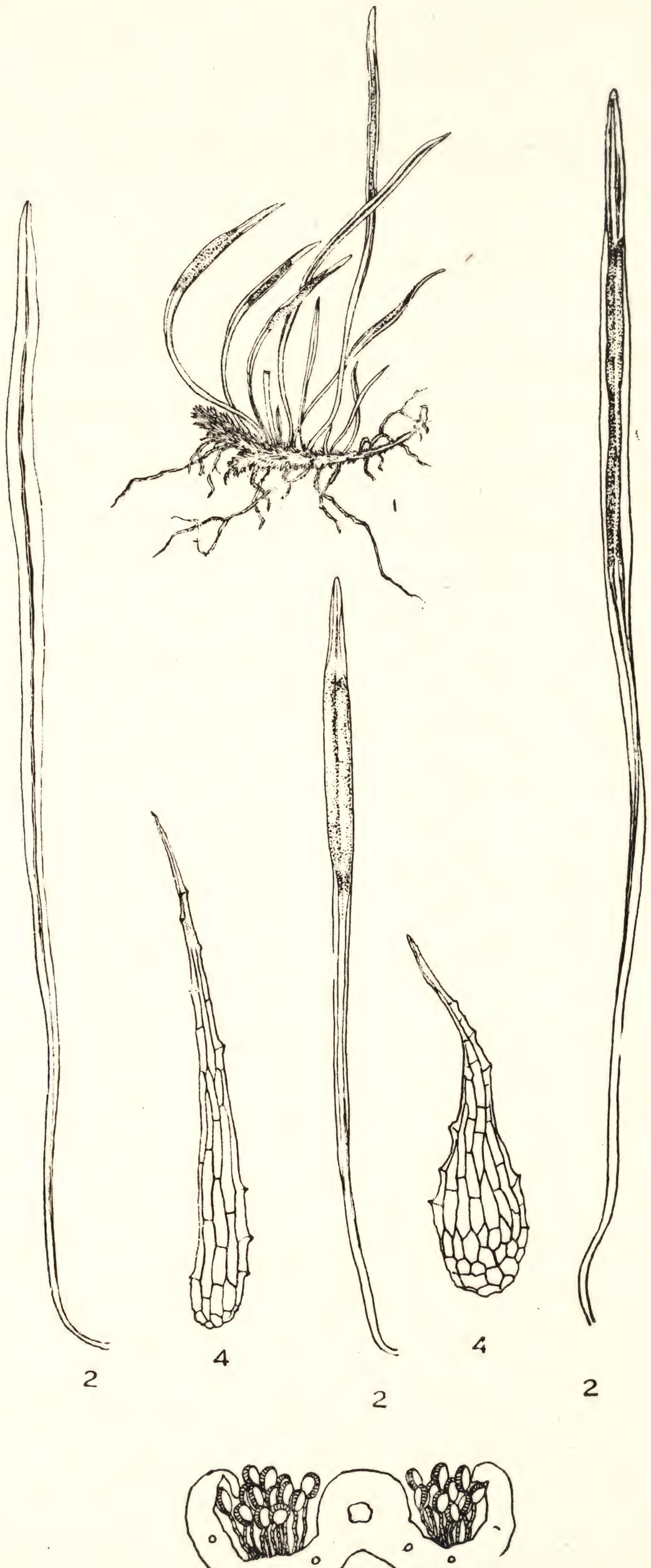
矮葉書帶蕨（水龍骨科）

VITTARIA NANA Ching.

地下莖匍匐，細瘦，殊密覆以暗色，短形，栗色，尖綫形，略成短齒狀之鱗片；葉體多數，簇生，直立，長三至七粉，寬一至一·五糎，綫形，漸向下窄縮形成短柄，向下漸窄，成鈍形稀至漸尖頭之頂端，邊緣反卷，中肋上面成深槽，下面隆起，葉體幾革質，軟弱，光滑；葉緣反卷，其後展舒，葉脉不顯；子囊群殊短，僅生於上部三分之二部分至近極端而止，往往僅一邊有之，生在中肋與邊緣之間。

分布：廣西。

圖註 1. 植物全形(自然大). 2. 葉體示子囊羣蓋及葉緣展開之情形(放大). 3. 葉體橫斷面示子囊群之位置(放大三十倍). 4. 地下莖之鱗片（放大二十倍)。



VITTARIA NANA Ching

矮 葉 書 帶 蕨

PLATE 40.

ANTROPHYUM PETIOLATUM Baker

POLYPODIACEAE

ANTROPHYUM PETIOLATUM Baker mss. Christ in Bull. Geogr. Bot. Mans: (1902) 202; Baker in Kew Bull. (1906) 14; Matthew in Journ. Linn. Soc. 39: 342 (1911).

Rhizome short, erect; scales basal, dark brown, linear-subulate, rather dense, membranaceous; leaves several together, *stipes* naked, green, compressed, 7-14 cm. long; *frond* obovate-cuneate, long-cuspidate, 10-13 cm. long, 5-6.5 cm. broad, broadest at the upper 2/3 or still higher up; *texture* carnoso-coriaceous, green and glabrous on both surfaces; *vein* rather distinct, vertical, rarely anastomosing, areolae narrow, above 2 cm. long, 3 mm. broad; *sori* copious, slightly immersed in broad shallow grooves, sometimes jointed at the ends.

Distribution: Yunnan, Kweichow, Kwangsi.

Nearest to *A. plantagineum* Klf., yet distinct for its much longer stipe, broadly obovate-cuneate frond with cuspidate apex and much broader, closer sori only superficially immersed in broad shallow grooves. First collected in Yunnan by A. Henry, later in 1898 by Père Bodinier in Kweichow and recently known from several localities in Kwangsi. As seen in its natural habitat, it generally grows on dripping or shaded rocky cliff by mountain torrents.

Plate 40. Fig. 1. Habit sketch (natural size.) 2. A portion of the frond, showing venation and sori (x 2). 3. Sporangium (x 76) 4. Hairs from the roots (x 76) 5. Scales from rhizome (x30)

第 四 十 圖

長 柄 車 前 蕨（水 龍 骨 科）

ANTROPHYUM PETIOLATUM Baker.

地下莖短，直立；鱗片在近基部，暗褐色，尖綫形，頗密，膜質；葉體數個叢集，葉柄無鱗片，綠色扁圓 長七至十四粉；葉體倒卵楔形，頂端長尾狀，長十至十三粉，寬五糎至六糎半，頂端三分之二部分或更近頂部處最寬，肥厚革質，兩面皆綠色，光滑；脈紋殊顯明，直行，稀有聯絡者，網紋窄長，長約二粉，寬三糎；子囊群頗多，微陷入寬淺之槽中，有時頂端相連。

分布： 雲南，貴州，廣西。

本種與 Antrophyum plantagineum Klf. 相近，但異點在較長之葉柄，寬倒卵楔形頂端長尾狀之葉體，子囊較密集微陷入寬而淺之槽中，此種最初 A. Henry採自雲南，其後 Père Bodinier 又採之於貴州，今在廣西各地亦發見之，最喜生山峽兩側蔭翳之石上。

圖註： 1. 植物全形(自然大). 2. 葉體之一部分示脈紋及子囊群(放大二倍). 3. 孢子囊(放大七十六倍). 4. 根上之毛 (放大七十六倍). 5. 地下莖之鱗片 (放大三十倍)。

ANTROPHYUM PETIOLATUM Baker

長 柄 車 前 蕨

PLATE 41.

POLYPODIUM DAREAEFORMIOIDES Ching

POLYPODIUM DAREAEFORMIOIDES Ching in Sinensia 1: 12 (1929).

Rhizome wide-creeping, thick, densely covered with imbricate shining brown scales, which are to 4 mm. long, broadly rounded at base, gradually narrowed upward to a linear-subulate apex with ciliate margin, attached to the rhizome by a dark brown centre of the broad base; *stipes* remote, rigid, to 18 cm. long, naked, lustrous castaneous and so is the entire rachis, articulated to the rhizome; *fronds* deltoid, shortly acuminate, 22 cm. long, 15 cm. broad at base, quadripinnate; pinnae about 10 on each side, the lower ones much the largest, petiolate, erecto-patent, 8-9 cm. long, 6-7 cm. broad, deltoid, secondary rachis naked, shining castaneous, 3-4 cm. long, 1.2-1.5 cm. broad, the upper ones gradually smaller, pinnate, the pinnules of third order oblong, on a winged petiole, costule shaded castaneous near base, pinnate, segments linear-oblong, clavate, 2-3 mm. long, often bifid into short lobes of unequal length; *texture* thin herbaceous; *veins* forked, veinlets simple, 1 to each segment, obscure, diaphanous; *sori* placed mostly some distance below the branching of veins, medial, small, round, about 1/3 as broad as the segment.

Plate 41. 1 Habit sketch (natural size.) 2. A pinna (x 2). 3. A pinnule, showing venation and sori (x 4). A scale from rhizome (x 24).

第四十一圖

烏柄水龍骨(水龍骨科)

POLYPDIUM DAREAEFORMIOIDES Ching.

地下莖匍匐甚廣，粗壯，密覆以覆瓦狀，有光澤，褐色之鱗片；鱗片長達四糎，基部廣圓形，漸向上窄瘦，成線形刺頭邊緣有纖毛之頂端，在葉柄基部與地下莖附着點作暗褐色；葉柄遠離，堅硬，長達十八粉，無鱗片，有光澤，栗色，葉軸亦如之，與地下莖相接處有關節，葉體三角形，短漸尖頭，長二十二糎，基部寬十五糎，四次羽狀；一次葉每側約有十個，在基部者最大，有柄，直立開張，長八至九粉，寬六至七粉，三角形，二次葉軸無鱗片，栗色有光澤，長三至四粉，寬十二至十五糎，上部者則漸小，羽狀，三次小葉長圓形，生於有翼之柄上，其中肋基部栗色，羽狀，裂片綫長圓形，有爪，長二至三糎，通常二裂爲不等長之短裂片；葉體草質，主脉分叉，支脉簡單，每裂片有一條，不顯明，半透明，子囊群位於主脉分叉之附近部位，形小而圓，寬約當裂片三分之一。

分布：

1. 植物全形(自然大).
2. 一小葉片(放大二倍).
3. 二次小葉示其及脉紋子囊群(放大四倍).
4. 地下莖上之鱗片(放大二十四倍)。

POLYPODIUM DAREAEFORMIOIDES Ching

烏 柄 水 龍 骨

PLATE 42.

POLYPODIUM MENGTZEENSE Christ.

POLYPODIACEAE

POLYPODIUM MENGTZEENSE Christ in Bull. Boiss. 6:869 (1898); C. Chr. Ind. 544 (1906) Matthew in Journ. Linn. Soc. 39: 381 (1911).

Polypodium aspersum Baker in Kew Bull. (1898) 231 (non *P. adspersum* Schrad. 1818, nec Blume 1828).

Polypodium argutum Wall. var. *khasianum* Clarke in Ferns N. Ind. (1880).

Rhizome creeping, epigaeous, flexuose, 4 mm. thick, clad in moderately dense deltoid-subulate dark brown clathrate scales; *stipes* 1.4-2 cm. apart, slender, naked, shining, pale straminous, 9-12 cm. long; *frond* lanceolate-oblong, simply pinnate, 26-35 cm. long, 12-15 cm. broad; *texture* almost membranaceous, green and glabrous on both surfaces, rachis slender and naked; pinnae 6-10 on each side under the long attenuate deeply inciso-crenate apex, subopposite, 2-2.5 cm. apart, lanceolate, acuminate, obscurely snciso-crenate, base obliquely truncate, somewhat cordate, dilatato-auricled on both iides, auricles rounded, the lower one more developed than the upper, the lower pinnae as long as the upper ones, horizontally patent, free, sessile, with the lower auricle usually imbricating the rachis, 6-8 cm. long, 8-14 mm. broad above the base, the upper ones more or less adnate, the uppermost one pair below the apex broadly adnate and decurrent some distance along the rachis, the terminal pinna the largest, 9-12 cm. long) and generally deeply inciso-crenate near the base; *veins* slender but distinct, costa raised on both surfaces, areolae large, uniseriate along both sides of the costa usually with 1 included soriferous veinlet, or very rarely 2, or forked at the apex, the other veinlets free falling some distance short from the margin, all with clavate apex; *sori* small, globose, superficial, sparsely disposed midway between the costa and margin.

Distribution: Yunnan.

A very distinct, elegant fern and evidently a close ally to *P. subauriculatum* Blume, from which differs in slender habit, smaller size, fewer and shorter pinnae of still thinner texture, uniseriate large areolae along the both sides of the midrib and a few sparse smaller and remote sori midway between the midrib and margin. It was discoverd by A. Henry in Mengtze, Yunnan, on wooded rocks or on the trunk of trees. *P. aspersum* Baker is conspecific with Christ's type.

Plate 42. Fig. 1. Habit sketch (natural size.) 2. A pinna, showing venation and sori (x 2). 3. A scale from the rhizome (x 76).

第 四 十 二 圖

蒙自水龍骨（水龍骨科）

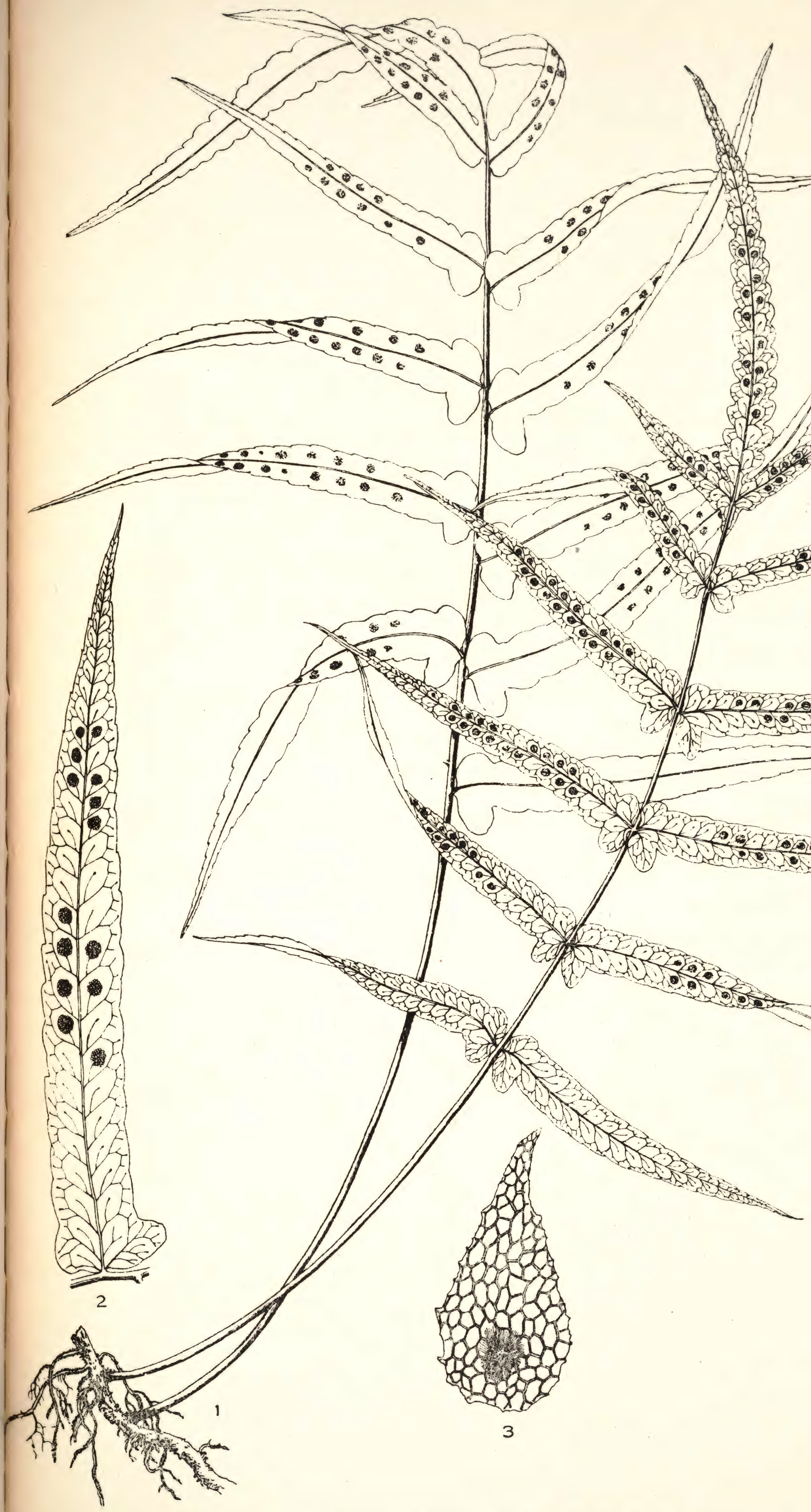
POLYPODIUM MENGTZEENSE Christ

地下莖匍匐生於地上，屈折，徑四糎，覆以殊密三角形刺頭暗褐色篩孔狀之鱗片；葉柄相距一·四至二粉，細瘦，無鱗片，有光澤，淡稻稈色，長九至二十粉；葉體披針長圓形，一次羽狀，長二十六至三十五粉，寬十二至十五粉，幾薄膜質，綠色，兩面光滑，葉軸細瘦無鱗片，每側小葉六至十個，生於長尖具深缺刻圓齒之頂端小葉下，幾對生，相距二至二·五粉，披針形，漸尖頭，不顯著缺刻圓齒狀，基部斜截形，略成心臟形，兩側皆具擴大之耳，耳圓形，在下側者較在上側者稍發達，下部小葉與上部小葉長短相同，橫列開張，無柄，獨立，下側之耳常掩覆葉軸，長六至八粉，近基部寬八至十四糎，上部小葉多少附著，最近頂端之一對側生小葉基部附著甚闊，向葉軸延展甚長，頂端小葉最大，長九至十二粉，近基部作深缺刻齒牙狀；脈紋雖細而清晰，中肋兩面隆起，網孔頗大，中肋之兩側各有一行，包括一具子囊群之細脈，稀具兩條或近頂處又分叉，其餘支脈遊離，支脈至近葉緣處而止，皆具粗肥頂端；子囊群形小而圓，生於表面，疎散於中肋及葉緣之間。

分布： 雲南。

此特殊美麗之種與 Polypodium subauricultum Blume 相近，但本種形小，細瘦，質薄，小葉亦短而少，葉脈網孔大，單行排列，子囊群亦較小，在中肋與葉緣之間甚疎，此種最初爲 A. Henry 發見於雲南，生於樹幹或林中積石上，Polypodium aspersum Baker 與 Christ 氏之原型種相符合。

圖註： 1. 植物全形（自然大）. 2. 一小葉示其葉脈及子囊群(放大二倍). 3. 地下莖上之鱗片(放大七十六倍)。



POLYPODIUM MENGTZEENSE Christ

蒙自水龍骨

PLATE 43.

POLYPODIUM OBLONGISORUM C. Christensen

POLYPODIACEAE

POLYPODIUM OBLONGISORUM C. Chr. Ind. 549 (1906); Matthew in Journ. Linn. Soc. 39:381 (1911).

Polypodium subintegrum Baker in Kew Bull. (1898) 231 (non 1877).

Rhizome epigaeous, wide-creeping, clothed with broad lanceolate blackish membranaceous clathrate dense scales; *frond* 1-2 cm. apart, narrowly linear, coriaceous, 25-40 cm. long, 3-8 mm. broad at the middle, gradually attenuate towards the base into a short stipe (2-4 cm. long), apex longacuminate, green and glabrous above, the under side sparsely covered with minute peltate brown deciduous scales, margin obscurely repandulous, narrowly revolute; *veins* obscurely immersed except costa, which is prominent, particularly underneath; *sori* large, marginal, 1-2 cm. apart, subopposite or alternate, oblong, superficial, bullate, short oblong, 4 mm. long, prominently projecting beyond the margin of the frond when mature, in consequence of the free parts of the margin becoming revolute.

Distribution: Yunnan.

A very remarkable plant, first discovered by A. Henry in Man-mei, Yunnan, epiphytic on the trunk of forest trees, and easily distinguished by its relatively large bead-like sori projecting well beyond the margin of long linear frond. From *P. eilophyllum* Diels to which the present species is closely allied, it differs in narrower, less revolute frond and the projecting marginal sori.

Plate 43. Fig. 1. Habit sketch (natural size.) 2. Scales from rhizome (x 30). 3. A portion of frond, showing venation (x 30).

第四十三圖

珠帶水龍骨 （水龍骨科）

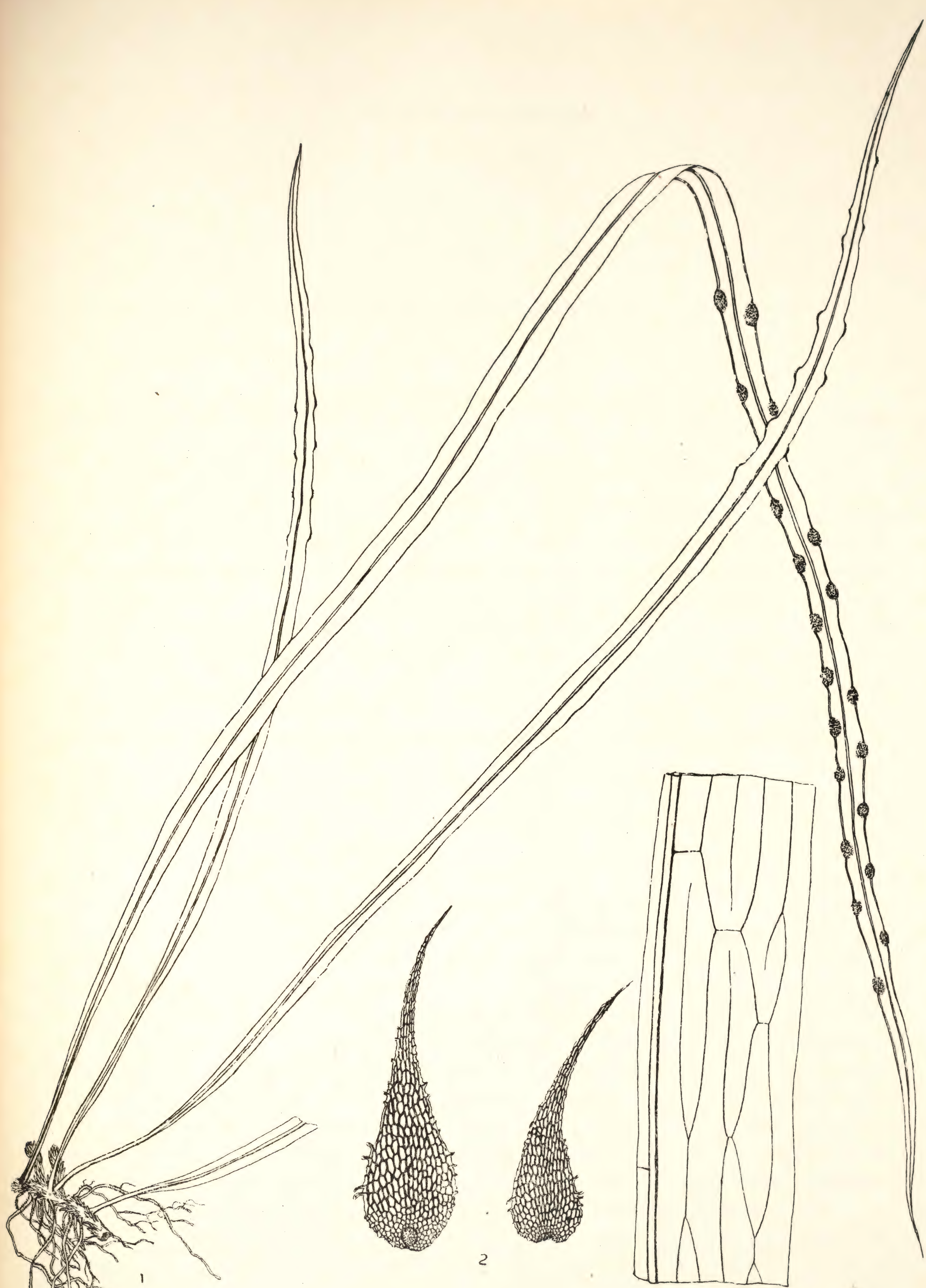
POLYPODIUM OBLONGISORUM Christensen.

地下莖生於地上，匍匐甚廣，密覆以廣披針形幾黑色膜質篩孔狀之鱗片，葉體相離一至二粉，窄線形，革質，長二十五至四十粉，中部寬三至八糎，漸向下窄縮，形成短柄（柄長二至四粉），長漸尖頭，上面綠色光滑，下面疎生短小盾形褐色脫落之鱗片，邊緣成不顯著波紋狀，反卷殊窄；葉脉通常皆隱沒，中肋則顯明，下面尤甚，子囊群寬大，生於邊緣，相離一二粉，幾對生或互生，長圓形，生於表面，泡腫狀，長四糎，成熟時突出葉緣，殊顯明，因而無子囊群之部分乃成反卷狀。

分布： 雲南。

本種最初爲 A. Henry 在雲南發見，生於樹幹上，其大形子囊群突出於長線形葉體之外，最易在野外識別也，本種習性與 Polypodium eilophyllum Diels 最相近，但葉體較窄，反卷較少，子囊群突出葉緣之外。

圖註： 1. 植物全體（自然大）. 2. 地下莖之鱗片（放大三十倍）. 3. 葉體之一部示其葉脉（放大三十倍）。



POLYPODIUM OBLONGISORUM C. Christensen

珠　帶　水　龍　骨

PLATE 44.

POLYPODIUM TRIGLOSSUM Baker.

POLYPODIACEAE

POLYPODIUM TRIGLOSSUM Baker in Kew Bull. (1898) 232; C. Chr. Ind. 571 (1906); Matthew in Journ. Linn. Soc. 39: 383 (1911).

Selliguea tripylla Christ in Bull. Boiss. 6: 878 (1899).

Rhizome creeping, epigaeous, clothed with small lanceolate, membraneceous, ferruginous dense scales; *stipes* subnaked, slender, brown, 30-45 cm. long; *frond* deltoid, 30-40 cm. long, trisect into 3 ascending lanceolate segments, the middle one the largest, to 40 cm. long, the two lateral ones somewhat shorter, 4-5.5 cm. broad, gradually tapering towards both ends, sinuses rounded, cleft down to 2-3 cm. from the base of the frond, margin entire or obscurely undulate; *texture* chartaceous, green and glabrous above, pale and sparsely clothed near the costa beneath with adpressed membraneceous dark-brown peltate or ovate-cuspidate scales; *venations* prominent, the lateral veins parallel, erect-patent, extending almost to the margin, intermediate veinlets anastomosing copiously into small hexagonal areolae with free included veinlets; *sori* small, oblong, superficial, scaly, uniseriate or tending to be biseriate along the costa between main veins.

Distribution: Yunnan.

The discovery of this beautiful species was indebted to Dr. A. Henry, who found it in the mountain forest in the district of Mile, Yunnan, and so far not yet known elsewhere. It is nearest to the large trifid forms of *P. pteropus* Blume, differs in larger sori, the presence of ovate-lanceolate dentate-ciliate dark brown scales on the under surface, the strongly dentate and conspicuously clathrate peltate scales in the sori and by the veinlets not forming a distinct series of large areolae. It is perhaps most interesting to note that this species is distinct from most of the members in § *Selliguea* in rather very short sori, which vary from oblong to almost globular towards the apex of the segments; a few short liner ones are, however, occasionally present near the basal part and very close and parallel or subparallel to the costae. In this respect it is not perhaps without reason to consider it as a linking species between § *Selliguea* and § *Pleopeltis*, which generally has sori not more than three times as long as broad.

Plate 44. Fig. 1. Habit sketch (natural size). 2. A portion of pinna, showing venation and sori (x $2\frac{1}{2}$). 3. Scales from rhizome (x 30).

第四十四圖

三葉水龍骨（水龍骨科）

POLYPODIUM TRIGLOSSUM Baker.

地下莖匍匐，生於地上，覆以小披針形膜質銹色密集之鱗片；葉柄幾無鱗片，細瘦，褐色，長三十至四十五粉；葉體三角形，長三十至四十粉，三裂成三個向上披針形之裂片，中央裂片最大，長達四十粉，兩側者略短，寬四至五·五粉，兩端漸窄縮，中間凹處圓形，削入至距葉基二三粉處，全緣或不顯著波紋狀；葉體紙質，上面平滑，綠色，下面淡色，中肋疎被以緊貼膜質暗褐色盾形或卵圓形刺頭之鱗片；脈紋甚顯明，側脈平行直伸向外開張，幾達葉緣，中間細脈聯絡成小六角形之網孔，包有內伸遊離之細脈；子囊群形小，長圓形，生於表面，有鱗片，一列或近中肋處成二列。

分布： 雲南。

本種最初爲 A. Henry 博士發見於雲南山地森林中，但至今尙無採之於他地者；本種習性與 Polypodium pteropus Blume 之壯大者相近，但異處則爲殊大之子囊群，葉下面生長之卵圓披針形，具纖毛暗褐色之鱗片，及子囊群中間深齒牙狀，顯然成篩狀斑紋盾狀之鱗片；本種之子囊群比同屬他種所有者皆窄，在基部者爲長圓形，在頂端乃成幾圓形，短線形者亦幾或有之，多在基部近中肋處，與中肋幾成平列，以是本種當視爲 Sellignea 及 Pleopeltis 兩系之中間種。

圖註： 1. 植物全形（自然大）. 2. 小葉之一部示葉脈及孢子囊群（放大二倍半）. 3. 地下莖之上鱗片（放大三十倍）。

PLATE 45.

POLYPODIUM ELLIPTICUM Thunberg.

POLYPODIACEAE

POLYPODIUM ELLIPTICUM Thunb., Fl. Jap. 335 (1784); Christ, Farnkraut. Erde 107; Diels in Nat. Pfl. Fam. 1. 4. 318; v. A. v. R., Malay. Ferns 677 (1908).

Gymnogramme elliptica Baker in Syn. Fil. 388.
Selliguea elliptica Bedd., Handb. 392
Gymnogramme decurrens Hook., Spec. Fil. 5; 161
Selliguea decurrens Bedd., Ferns Brit. Ind. t. 150.
Grammitis decurrens Wall., HK. et Grev. in Ic. Fil. t. 6.
Gymnogramme pentaphylla Baker in Kew Bull. (1898) 233.

Rhizome thick, woody, wide-creeping, blackish, clad in dense lanceolate acuminate, blackish, clathrate more or less adpressed scales; *stipes* scattered, 20-40 cm. long, firm, erect, naked, pale or straw-coloured; *fronds* 20-50 cm, long, 13-25 cm. or more broad, oblong-ovate, pinnatifid down to the rachis into 4-10 rarely more pinnae on each side under the terminal segment similar to the lateral ones; pinnae linear-lonceolate or lanceolate-oblong, acuminate, 1-3 cm. broad, 5-20 cm. long, horizontally patent, the lower ones scarcely reduced, mostly connected by decurrent oblique bases, which form a wing to the rachis, margin usually entire, sometimes obscurely undulate or repand; *texture* herbaceous, quite glabrous; main *veins* slender, not distinct to the edge, intermediate veinlets anastomosing copiously with a row of large costal areolae with included bifid veinlets, all jointed near the margin; *sori* linear, oblique, almost reaching the midrib, but not the margin.

Distribution: Tropical Asia; China: Kwantung, Kwangsi, Yunnan, Szechwan, Hupeh, Kiangsi, Anwhei, Chekiang, Kiangsu, Fukien, also in Korea and Japan.

A Common but most variable fern in South and Central China. It often varies from 15-80 cm. tall with 2-10 lateral pinnae 5-25 cm. long, 0.8-4 cm. broad. In extreme forms, the pinnae are only about 5 mm. broad. *P. flexilobium* Christ and *P. fauriei* (Christ) Nakai are better regarded as reduced forms of the present species, as the ample materials at my disposal show all gradations from Christ's *P. flexilobium* upward.—R. C. C.

Plate 45. Fig. 1. Habit sketch (natural size). 2. A portion of frond, showing venation (x 2) 3. Scales from rhizome (x 16).

第 四 十 五 圖

橢 圓 水 龍 骨（水 龍 骨 科）

POLYPODIUM ELLIPTICUM Thunberg.

地下莖粗壯，木質，匍匐甚廣，幾黑色，密覆以披針形漸尖頭幾黑色篩孔狀貼附之鱗片，葉柄疎生長二十至四十粉，堅實，直立無鱗片，淡黃或稻稈色，葉體長二十至二十五粉，寬十三至二十五粉，或略寬，長卵圓形，羽狀深裂至中肋，每側約有小葉四至十個，頂端之小葉與兩側相同；小葉細披針形或披針長圓形，漸尖頭，寬一至三粉，長五至二十粉，平行開張，近基部者形體稍較短小，多數以斜向下延之基部相連，形成葉軸之翼，小葉全緣，或成不顯著波紋或皺波狀；葉體草質，殊光滑，主脉細，至近葉處不顯明，中間細脉聯絡成一行大形網孔，中含支脉作雙叉狀，在近邊緣處相連，子囊羣線形，斜生，幾達中肋但距葉緣則較遠。

分布：亞洲熱帶及中國：廣東，廣西，雲南，四川，湖北，安徽，浙江，江蘇，福建；高麗及日本亦有之。

本種在中國南部及中部分布甚廣，形體幾微之變異亦多，高者達八十粉，矮者僅十五粉，側生小葉自二至十個，長五至二十五粉，寬乃由八糎至四粉，Polypodium flexilobium Christ 及 Polypodium fauriei (Christ) Nakai. 當認爲本種之形態稍異者，此由作者比較多數標本而知之。——仁昌。

POLYPODIUM ELLIPTICUM Thunberg

橢　圓　水　龍　骨

PLATE 46.

POLYPODIUM LEVEILLEI (Christ) C. Christensen

POLYPODIACEAE

POLYPODIUM LEVEILLEI (Christ) C. Chr. Ind. Suppl. 60 (1906-13).

Selliguea léveillei Christ in Bull. Geogr. Bot. Mans (1906) 236.

Rhizome wide-creeping, 3 mm. across, black, clothed with black sparse rigid setaceous scales; *stipe* stramineous, solitary, 1-3 cm. apart, slender, sharply angular below, 10-15 cm. long, with the base of frond gradually decurrent along it into a long narrow wing on each side; *frond* about 20-30 cm. long, 2.2-4 cm. broad, or broader at the middle, narrowly lanceolate, acuminate, suddenly narrowed near the base and long decurrent along the stipe, margin crispato-undulate and obscurely crenate; *costa* prominent on both sides, stramineous, lateral veins obliquely patent, extending to the margin at acute angles, straight or subflexuose, about 30 on each side, the middle ones $\frac{1}{2}$ cm. apart, very slender, areolae between transverse veins about 5, oblong-rectangular with simple clavate retrorsed included veinlets; *sori* running along the lateral veins from the costa to the margin, very slender, brown *texture* flaccid, herbaceous, light green, and glabrous on both surfaces.

Distribution: Yunnan, Kweichow, Kwangsi.

A close ally to *P. wrightii* (HK.) Mett. which, however, has much narrower frond, not abruptly narrowed towards the base and numerous copiously forked, included veinlets. A pretty fern, discovered by Père Cavalerie in Kweichow, 1904, growing on moist banks of stream.

Plate 46. Fig. 1. Habit sketch (natural size). 2. A portion of frond, showing venation and sori (x 2). 3. Sporangium (x 145). 4. Scales from rhizome (x 30).

第四十六圖

萊氏水龍骨（水龍骨科）

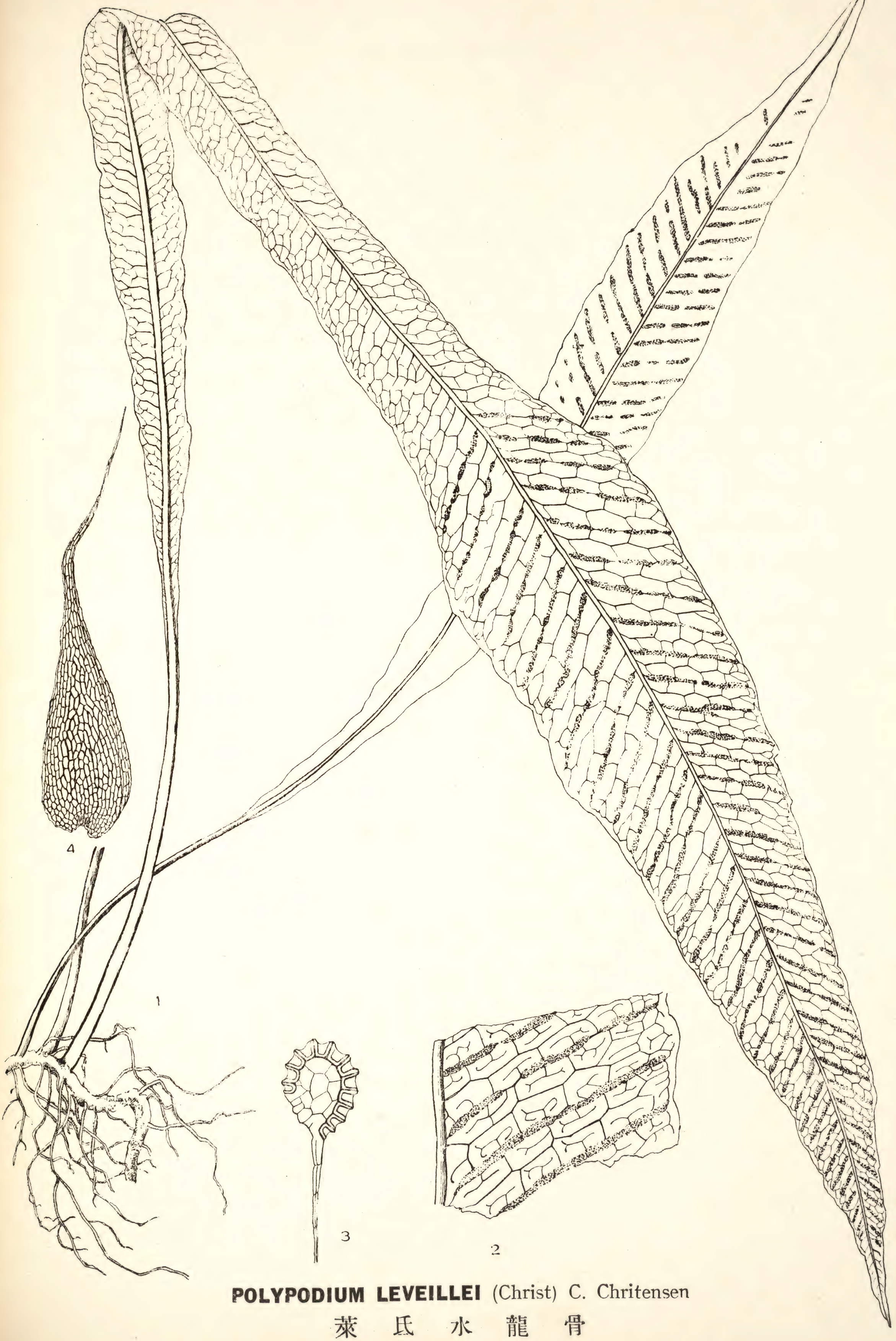
POLYPODIUM LEVEILLEI (Christ) C. Christensen.

地下莖匍匐甚廣，寬三糎，黑色，密覆以黑色，疎生，堅硬，剛毛狀之鱗片；葉柄稻桿色，獨生，相距一至三粉，細瘦，下面有稜，長十至十五粉，葉體基部漸向下延展形成窄長之翼；葉體長二十至三十粉，中部寬二·二至四糎，或稍寬，窄披針形，漸尖頭，基部突然窄縮，形成葉柄之翼，邊緣卷皺，依稀成圓齒狀，中肋兩面皆明稻桿色，側脈斜向開張，伸至葉緣與之成銳角，直出或幾彎屈，每側有三十條，中部者約相距半粉，甚細，橫顯脈中間之網孔約五個，長圓扁方形，包括一簡單棒形內卷之細脈，子囊羣生側脈上，從中肋至葉緣甚細，褐色；葉體草質，柔軟，淡綠色，兩面光滑。

分布：雲南，貴州，廣西。

本種與 Polypodium wightii (HK.) Mett. 相近，但後者之葉比本種窄瘦，下部亦不縮成葉柄之翼狀體，且細脈分叉較多，此種最初爲 Père Cavalerie 於 1904 年採自貴州之溪畔。

圖註： 1. 植物全形（自然大）. 2. 葉體之一部示其脈紋及孢子囊羣（放大二倍）. 3. 孢子囊（放大四十五倍）. 4. 地下莖上之鱗片（放大三十倍）。



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POLYPODIUM LEVEILLEI (Christ) C. Chritensen

萊 氏 水 龍 骨

PLATE 47.

LOXOGRAMME CHINENSIS Ching.

POLYPODIACEAE

LOXCGRAMME CHINENSIS Ching in Sinensia 1: 13 (1929).

Rhizome wide-creeping, 2-3 mm. thick, scales dark brown, dense, adpressed or subpatent, broad at base, gradually attenuate to a long subulate apex, distinctly clathrate; *stipes* none or very short; *frond* subapproximate, pale green, glabrous throughout, somewhat dimorphic, 5-14 cm. long, to 7 mm. broad in the broadest part, the sterile ones broader (9 mm.) and generally shorter, broadest in the upper one-third, slowly narrowed downward to the base or a short stipe, about 2 mm. broad near the base, apex acute to blunt, margin entire, revolute, somewhat undulate; *midrib* slender, raised above, flattened or slightly grooved below, veins and veinlets hidden; *texture* coriaceous, but flaccid; *sori* oblique to subparallel, more often tending to be confluent, not costal, but well extending to the margin, 3-8 mm. long, confined to the upper one-third portion of the frond.

Distribution: Kwangsi.

Plate 47. 1. Habit sketch (natural size). 2. A portion of frond, showing venation and sori (x 4). 3. Scales from rhizome (x 24).

第 四 十 七 圖

華劍蕨（水龍骨科）

LOXOGRAMME CHINENSIS Ching.

地下莖匍匐甚廣，粗二三糎，鱗片暗褐色，密生，貼附或幾開張，基部殊寬，漸向頂端窄縮成長尾狀，顯明篩孔狀；葉柄無或殊短；葉體幾密接，淡綠色，光滑，形態約分二種，長五至十四糎，最寬部分寬達七糎，無子囊羣葉略寬（達九糎）而較短，自上部三分之一處最寬，漸向下窄縮形成短柄，基約寬二糎，頂端尖形或鈍形，全緣，反卷，幾微成波狀；中肋細，上面隆起，下面平或微有槽，側脈及支脈不顯明；葉體革質，柔軟；子囊羣斜生或幾平行，通常傾向於合併，不生於中肋上，但幾達葉緣，長三至八糎，僅限於葉體上部三分之一。

分布：廣西。

圖註： 1. 植物全形（自然大）. 2. 葉體之一部示葉脈及子囊羣（放大四倍）. 3. 地下莖之鱗片（放大二十四倍）。

LOXOGRAMME CHINENSIS Ching

華　　劍　　蕨

PLATE 48.

NEOCHEIROPTERIS PALMATOPEDATA (Baker) Christ

POLYPODIACEAE

NEOCHEIROPTERIS PALMATOPEDATA (Baker) Christ in Bull. Soc. Bot. Fr. 52; Mém. I. 21 (1905) C. Chr. Ind. 432 (1906).

Polypodium palmatopedatum Baker in Kew Bull. (1895) 232.

Cheiropteris henryi Christ in Bull. Boiss. 6; 876 (1898); Diels in Nat. Pfl. Fam. I. 4. 189. fig. 98 (1902).

Cheiropteris palmatopedata Christ in Bull. Boiss. 7: 21. t. I (1899);

Rhizome epigenous, wide-creeping, about 7 mm. thick, clothed in large lanceolate, cuspidate membranaceous sordid brown imbricate ciliate dense scales; *stipes* distant, 30-45 cm. long, stiff, naked throughout, stramineous, teret underneath, deeply 3-striate above; *frond* flabellate-quadrate pedate-palmatifid, base cuneate, 25-30 cm. long and broad or broader; *texture* chartaceous, green and glabrous above,, sparsely clothed with minute brown scales beneath; segments 10-20 cm. long, upright, lanceolate, slightly imbricate, the middle ones 17-20 cm. long, 2.5-3 cm. broad, the lateral ones much smaller, margin entire; *costa* prominently raised below and less so above, veins anastomosing into small hexagonal areolae; *sori* superficial, usually confined to the lower half of the segments, the outermost segments sterile or at best sparsely soriferous, close to the costa, the lower ones oblong or linear-oblong, the upper ones globose.

Distribution: Yunnan, Szechwan.

This unique fern was first discovered by Père Delavay in the mountains in Ta-ping-tze, Yunnan, September 4th. 1883, and by A Henry at Mile in the same province about fifteen years later, but it was the latter's specimens which received the first attention from Baker, who called it *Polypodium palmatopedatum*, while the former's specimen remained unkown in the Museum d'histoire naturelle de Paris until about 1905 when it was identified by Christ, who changed his *Cheiropteris palmatopedata* to the present name[1] . This fern must be considered as one of the most outstanding additions to our Chinese flora, discovered by early European botanical explorer in this country. As already quite thoroughly discussed by Christ[2] , the present fern is entitled a systematic place between *Dipteris* and *Polypodium* § *Pleopeltis*, both of which are represented in Yunnan by their respective members growing side by side with our species there. However, the plant differs from either of its relatives in large elongated costal sori and, particularly, in the broad and incrassate receptacle, formed by the dilatation by the dorsal part of the costal viens, on which the sorus is borne.

Plate 48. Fig. 1. Habit sketch (natural size). 2. A portion of segment, showing venation and sori (x 3). 3. Sporangium (x 90). 4. Scales from rhizome (x 40)

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1. *Cheiropteris* was preoccupied in Kurr, Gen. Palaentologique.
2. Bull. Boiss. 7: 21. 2. 1899.

第四十八圖

掌狀扇蕨（水龍骨科）

NEOCHEIROPTERIS PALMATOPEDATA (Baker) Christ.

地下莖生地面上，匍匐甚廣，寬約七糎，密被鱗片，鱗片大，披針形，有尾狀尖端，薄膜質，暗褐色，覆瓦狀排列，有纖毛；葉柄相距甚遠，長三十至四十五粉，堅硬，全體裸露，稻桿色，底部管狀，上部具三條深紋，葉體方形扇狀，二裂掌狀分裂，基部楔形，長闊各二十五至三十粉之間，或略寬，紙質綠色，上面平滑，下面具疎散之短小褐色之鱗片，葉片長十至十二粉，長披針形，略相掩覆，中央之裂片長十七至二十粉，寬二粉半至三粉半，兩側之裂片則較小，全緣，中肋甚顯明而略隆起，下部尤甚；脈絡交錯成六角形之網孔；子囊群生於表面，常集合於葉裂片之下部，外部裂片往往無子囊群或略有數枚生於中肋附近；子囊群在下部者形長方或長線狀，在上部者圓形。

分佈：雲南，四川。

本種在 1883 年已爲 Père Delavay 採自雲南，但其後十五年 A. Henry 氏又在該省採得，始爲植物學者注意，Baker 氏定爲新種，名曰 Polypodium palmatopedata，至 1905 年，Christ 氏發見前者之標本於巴黎自然博物館始定今名，本種性質介乎 Dipteris 及 Polypodium 之 Pleopeltis 系之間，此三者皆產雲南，相雜而生，但本種生於中肋兩側之子囊群，及其寬而堅實由背面脈絡分襞而成之子囊托，則爲最顯著之特性，易與其他區別者也。

圖註：1. 植物全體(自然大)．2. 葉片一部示其脈絡與子囊群(放大三倍)．3. 孢子囊(放大九十倍)．4. 地下莖之鱗片(放大四十倍)。

NEOCHEIROPTERIS PALMATOPEDATA (Baker) Christ

掌　狀　線　蕨

PLATE 49.

POLYPODIACEAE

ELAPHOGLOSSUM AUSTRO-SINICUM Matthew et Christ

ELAPHOGLOSSUM AUSTRO-SINICUM Matthew et Christ in Lecomte Not. Syst. 1: 57 (1909); C. Chr. Ind. Suppl. 41 (1906-13); Matthew in Journ. Linn. Soc. 39: 368 (1911).

Arostichum austro-sinicum Tutcher in Fl. Kwant. and Hongk. 355 (1912).
Elaphoglossum parvulum Copel. in Phil. Journ. Sci. Bot. C II:40 (1916).

Rhizome short, thick, densely rooted; leaves 4-6 together, *stipes* tufted, thick, stout, 3 mm. across, greenish, deeply sulcate above, terete below, 3-6 cm. long, copiously clothed in broad, ovate, membranaceous, entire,scarious light brown, obtuse scales 5 mm. long; sterile *frond* 15-30 cm. long, 3-3.5 cm. broad at the middle, cultrato-lanceolate, from the middle upward gradually acuminate in an obtuse apex, long decurrent towards the base, margin entire, thickened, surfaces, particularly the under, densly clothed with small blackish lacerato-dilated adpressed scales; *costa* very broad, plane, 2-3 mm. broad, pale green; lateral *veins* very oblique, inconspicuous, 2 mm. apart, extending to the thickened margin, mostly simple or forked; texture carnoso-coriaceous, thick, light green above, pale green beneath; fertile fronds somewhat narrower, much shorter than the sterile, stipes 7-10 cm. long; *sori* dark brown, covering the entire under surface except the midrib and a narrow free margin.

Distribution: Kwangtung, Kwangsi, Fukien.

A very distinct species, characterized by a broad flat midrib, broad thickened margin, thick carnoso-subcoriaceous texture and dense coating of lacerate-dilated brown scales underneath. It was first found by Dr. Matthew in Tai-mo-shan, New Territory, opposite Hongkong, in 1907, on shaded granite cliff, and of late has been reported from several localities from Kwangsi. The type specimen of the present species consisting of 3-4 robust sterile leaves represents rather an extreme form.

Elaphoglossum parvulun Copel. based upon Dunn's specimen, No. 3821, from Central Fukien (1905), is not specifically different from the type except of smaller size with somewhat broader leaves, only about half as long as the type. All the specimens from Kwangsi I have examined are mostly approaching the type in dimension.—R. C. C.

Plate 49. Fig. 1. Habit sketch (natural size). 2. Venation (x 2). 3 Two sporangia (x 106). 4. Scales from the base of stipe (x 10).

第四十九圖

華南舌蕨 （水龍骨科）

ELAPHOGLOSSUM AUSTRO-SINICUM Mathew et Christ.

地下莖短，粗壯，有多根；葉柄四至六個簇生，葉柄粗壯，叢生，徑達三糎，淡綠色，上面有深槽下面圓形，長三至六粉，密覆以寬卵圓形，薄膜質，全緣，淡褐色，鈍頭之鱗片，鱗片長約五糎；無子囊葉長十五至三十粉，中間寬三至三.五粉，刀鋒披針形，自中部向上窄縮成漸尖而鈍頭之頂端，基部向下延長，葉緣完全，加厚，密覆以幾黑色碎裂擴張貼附之小鱗片，下面尤甚；中肋甚闊而平，寬二三糎，淡綠色；側脈甚斜，不顯明，相距二糎，直達葉緣，通常多單枝，亦有分叉者；葉體肥厚革質，上面淺綠色，下面淡綠色；有子囊葉略窄而短，葉柄長七至十粉；子囊群暗褐色，密生於葉體下面，僅中肋附近及緣內無之。

分布： 廣東，廣西，福建。

本種爲一特殊之蕨，其特徵在平闊之中肋，廣闊之厚邊緣及其肥厚革質之葉體，並下面密生之碎裂褐色鱗片，此種最初在 1907 年爲 Matthew 採自香港附近陰翳之巖石上，近年曾在廣西發見數次其模式標本具三四粗厚無子囊葉，實爲本種中之特殊情形。

按 Dunn 採自福建中部之標本 3821 號之 Elaphoglossum parvulum Copel. 實與本種無別，但形態略小葉略寬耳，但作者所鑑定之多數廣西標本皆與 Matthew 氏之模式大小相同。—仁昌

圖註： 1. 植物全形（自然大）. 2 兩個孢子囊（放大一百〇六倍）. 3. 葉柄基部之鱗片（放大十倍）。

ELAPHOGLOSSUM AUSTRO-SINICUM Matthew et Christ

華　　舌　　蕨

PLATE 50.

CHEIROPLEURIA BICUSPIS (Bl.) Presl

POLYPODIACEAE

CHEIROPLEURIA BICUSPIS (Bl.) Presl, Epim. 189 (1839); Christ, Farnkraut. Erde 128, fig. 360; Diels in Nat. Pfl. Fam. 1. 4. 336, fig. 175; C. Chr. Ind. 181 (1905).

Polypodium bicuspe Bl., Enum. 125 (1828), Fl. Jav. Fil. t. 78 B.
Anapausia bicuspis Moore, Ind. XXI (1857).
Acrostichum bicuspe HK. Sp. Fil. 5: 271, Syn. Fil. 421.
Gymnopteris vespertilia HK. in Lond. Journ. Bot. 5: 193, t. 7-8 (1846).
Cheiropleuria vespertilia Presl, Epim. 190 (1849).

Rhizome woody, thick as man's small finger, short-creeping, densely clothed with yellowish silky hairs; *stipes* several together, those of barren frond 30 cm. or more long terete below, broadly grooved above, dark stramineous, shining; barren *frond* 10-15 cm. long and a little less broad in the entire portion, ovate, rounded at the base, the upper part consisting of 2 broad divaricated deltoid acuminate lobes with a broad rounded sinus between, margin entire; *texture* thick coriaceous, shining green above, pale below, glabrous on both surfaces; main *veins* palmate, radiating from the apex of the stipe to the upper edge, with copious areolae between them; fertile fronds 15-25 cm. long, 1-1.2 cm. broad, ligulate lanceolate, tapering on both ends, simple, with 3 prominent ribs,; *sori* dark brown, densely covering the whole under surface except the midrib and a very narrow free margin, the stipe 45 cm. or longer.

Distribution: Java, Formosa, Liu-kiu Isles, Philippines, Sumatra, Japan, China: Kwangsi.

It is interesting to note here that the genus *Cheiropleuria* was not known from China prior to the Academia Sinica Kwangsi Expedition, 1928, when it was discovered by me for the first time in N. Kwangsi on the border of Kweichow, in the chink of rather exposed limestone cliff. A very rare fern in the region. Our Chinese plant matches Blume's type very well in having bilobed frond. The var. *integrifolia* Eat. with simple entire ovate-acute or short acuminate barren leaves, commnon in Formosa, is not yet known in this country.—R.C.C.

Plate 50. Fig. 1. Habit sketch (natural size). 2. A portion of sterile frond, showing venation (x 6). 3. A portion of cross section of fertile frond, showing disposition of sori and paraphyses (x 25). 4. Hair from rhizome (x 25). 5. A sporangium (x 100). 6. Paraphyses (x 40).

第五十圖

二尖燕尾蕨（水龍骨科）

CHEIROPLEURA BICUSPIS (BL.) Presl

地下莖木質，粗如手指，短而匍匐，密覆以幾黃色有光澤之毛；葉柄數個簇生，無子囊葉之柄長三十粉，或尤長，下面圓形，上面具寬槽，暗稻桿色，有光澤；無子囊葉體長十至十五粉，稍窄，卵圓形，基部圓形，葉上部成兩廣三角形漸尖頭之裂片，凹處寬闊圓形，全緣；葉體厚革質，上面綠色有光澤，下面稍淡兩面皆無毛；主脈掌狀，由葉柄頂端向葉緣輻射，其間有多列網孔，有子囊葉長十五至二十五粉，寬一至一 二粉，舌狀披針形，兩端窄縮，簡單，具三條主脈；子囊羣暗褐色，密布於葉體下面，僅在中肋附近及葉緣內留一窄隙，葉柄長四十五粉。

分布：爪哇，臺灣，琉球，菲律賓，蘇門答拉，日本；中國：廣西。

Cheiropleura一屬在中國發見實以 1928 年中央研究院廣西採集團爲嚆矢，本種由作者採自廣西北部與貴州交界之石灰巖上，此次之標本皆具兩裂片之葉體與 Blume 氏之模式標本無不符合，但臺灣之變種 integrifolia Eat. 之具全葉者尙未見之於中國也。——仁昌

圖註： 1. 植物全形（自然大）. 2. 無孢子囊羣之葉體之一部表示葉脈（放大六倍）. 3. 有孢子囊羣之葉體之橫切面表示孢子囊羣與隔片之位置（放大二十五倍）. 4. 地下莖上之鱗片（放大二十五倍）. 5. 孢子囊羣（放大一百倍）. 6. 隔片（放大四十倍）。

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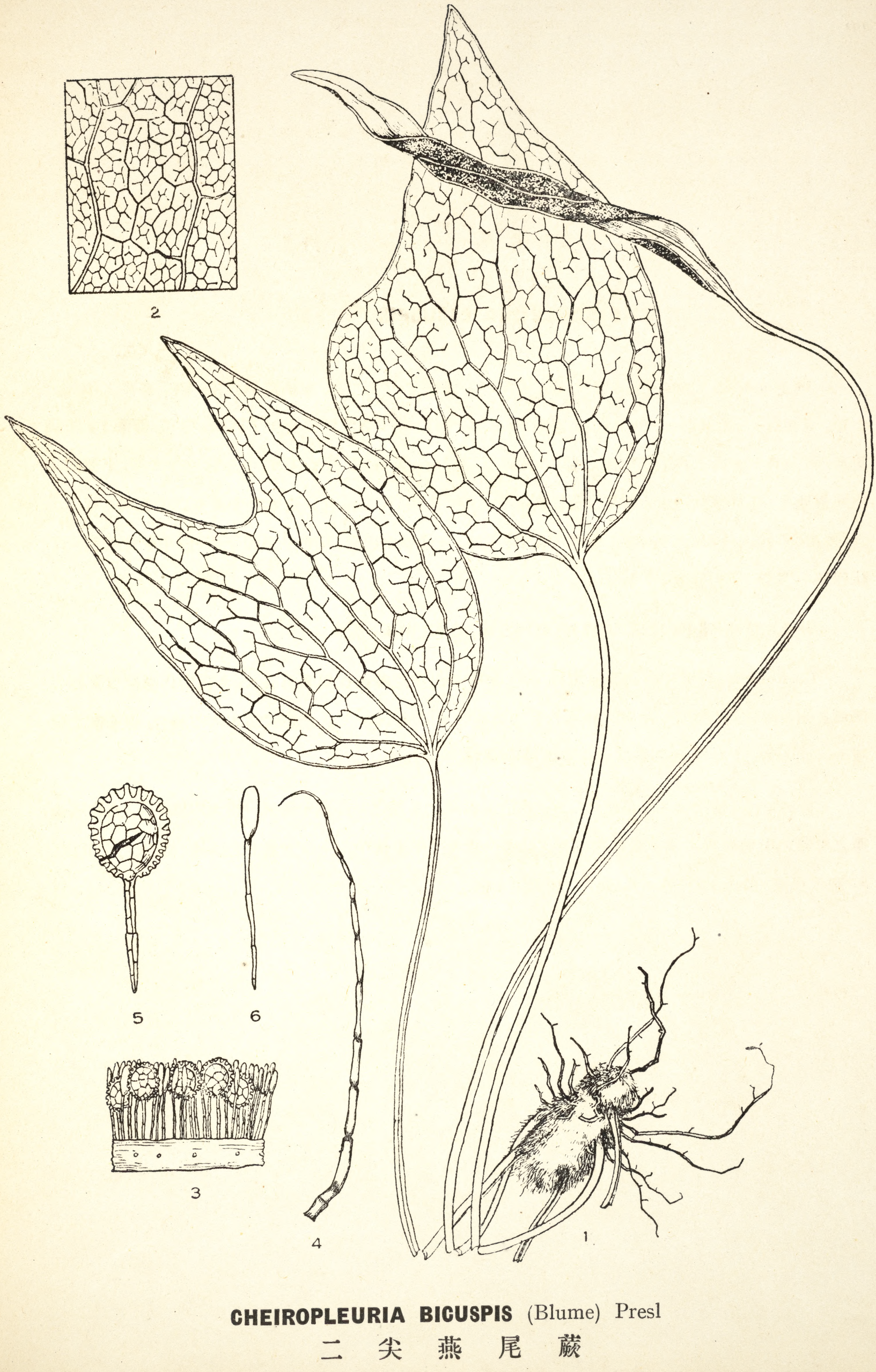

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